American Artisan and Hardware Record

Sheet Metal Work-Warm Air Heating

Vol. 94, No. 3 | CHICAGO, JULY 16, 1927 | $2.00 Per Year

Today's Supreme Warm Air Furnace

WATERBURY

SEAMLESS PIPELESS

HERE'S the furnace that appeals to all! Waterbury's many decided advancements in furnace design give it universal preference. It stands alone in providing ALL the features people want today!

Welded, SEAMLESS Steel the heaviest used in furnace construction. No cast iron joints. CLEAN, dust-proof and gas-tight for life.

Really enough moisture evenly distributed, by shallow waterpan placed at the top. Automatic if desired.

Utmost economy No undersized radiators — a special size for each furnace. The Standard Code Capacity of every size is plainly shown by metal plate.

Waterbury dealers are succeeding far beyond their expectations—because they can offer today's supreme warm air furnace.

Write for our big catalog and agency proposition. Then you'll know what to do!

The Waterman-Waterbury Co.

1122 Jackson St. N. E. Minneapolis, Minn.

Prompt Service

Complete Stocks carried in Philadelphia, Pittsburgh, Albany, New Orleans, Kansas City, Denver, San Francisco and Seattle

Regardless of what you sell

HOMER Merchandising Service at Your Command!

Even though you don't sell HOMER Heating Systems, we will gladly assist, if permitted, in the solution of any problems confronting you—lack of volume, low-price competition, insufficient net earnings. A plan to fill and fit your local need will be outlined after a personal investigation on the ground of your situation.

Request this Advisory Service with No Obligation Whatever!

Heating contractors and consumers, alike, tell us the 1927 HOMER GRAND FURNACE fulfills the demand of the most exacting. HOMER SALES-MAKERS smooth over the rough spots of selling at profitable prices.

WARM AIR MOIST AIR HEAT FRESH AIR

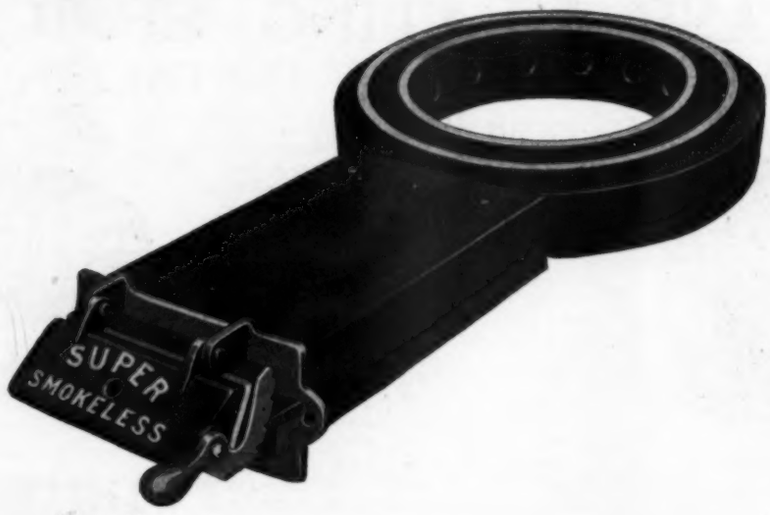
Homer Furnace Company

Coldwater, Michigan, U. S. A.

What's home without a Homer

Write us today. We may be able to help you materially

ASK US TO MAIL THE HOMER WEEKLY BULLETIN

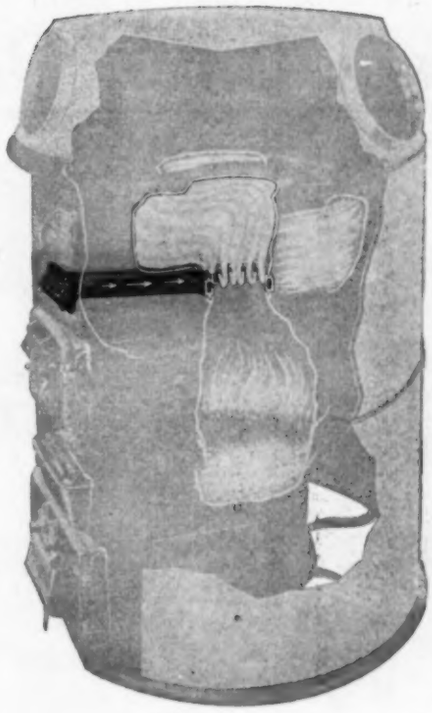


This is the *Carburetor*

Placed between the combustion dome and the radiator of the SUPERIOR SUPER-SMOKELESS Warm Air Furnace, it performs a seeming miracle! It draws air from outside the furnace, heats it, and then mixes this air with the unburned gases and smoke that rise from the burning coals.

Result—a *second* fire. No waste gases, *no smoke*, even with soft coal, and *more heat* with less fuel.

This furnace has proved itself a remarkable seller because dealers can *demonstrate* its double combustion and its unequalled thermal efficiency!



Utica Heater Co., Utica, N. Y.
365 E. Illinois St.---Chicago, Ill.

Makers of Superior Pipe and New Idea Pipeless Furnaces

Any dealer interested in *materially* increasing his furnace sales *at a good profit*, will do well to write us for full information on SUPER-SMOKELESS Furnaces—as well as our complete line. Our Sales Demonstration Plan will greatly assist in building up your business.

SUPERIOR DEALERS ARE EXCEPTIONALLY LOYAL --- WHY?

Published Weekly by American Artisan and Hardware Record, Inc., 620 South Michigan Avenue, Chicago, Illinois.
Entered as Second Class Matter June 25, 1887, at the Post Office at Chicago, Illinois, under act of March 3, 1879.

INCREASE HEATING EFFICIENCY
AND PROFITS BY INSTALLING

The Heat-O Booster draws cold air directly from the rooms or from the return air pipes. Air is discharged directly and uniformly against the hottest parts of the furnace, extracting more heat units. When the return air rises the Heat-O Booster shoots it up into the casing, through the leaders with sufficient force to overcome any resistance or cold air pressure.

Easily done with HEAT-O BOOSTERS. Amazing results have been accomplished with this finer way of heating—customers more than satisfied—dealers make more money.

The HEAT-O LINE has innumerable selling arguments: Heat reaches rooms quickly, as soon as the fan is started; heat in rooms is more evenly distributed from floor to ceiling; furnace castings never overheated; fuel consumption 10 to 60 per cent lower; better all-'round results from the furnace. The HEAT-O BOOSTER system is the finest fan-furnace installation that money can buy—it gives dependable, economical, positive heat. Distinctive design and exclusive features—should not be confused with the ordinary fan-furnace job.

BUILT TO FIT ANY WARM AIR FURNACE

The HEAT-O LINE **is adaptable to any furnace**—cast or steel. Installations have been made with many well known furnaces—Thatcher, Utica, Robinson, International, Gilt-Edge, Mueller, Premier, Round Oak, Rudy, Richardson & Boynton, Cribben & Sexton, Moore Bros., Holland, Weir, Torrid Zone, Marshalltown, Success, Colburn, etc. Whatever line you handle, get the facts about this better method of heating. The HEAT-O LINE is the ideal fan-furnace system for homes, churches, schools, stores, factories, shops, garages, etc.

Designed by expert furnace engineers who have supervised hundreds of successful installations—their help is yours for the asking. Write today for full particulars about the HEAT-O LINE.

THE

HEAT-O

LINE

Boosters and Unit Heaters. The Ideal Fan-Furnace Equipment for Residences, Churches, Schools, Stores, Factories, Theaters—wherever dependable, economical warm air systems are desired.

Style A Booster. An original idea, by far the most advanced step in furnace-fan heating. Shipped complete—nothing to get out of order—merely hang it inside the casing or cut a slot in it to install the booster.

ROBINSON FURNACE COMPANY

205-7 West Lake St. *Heating Systems* CHICAGO

How Is Business?

B. F. LICHTY

"Good"—

says B. F. Lichty
Waterloo, Ia.

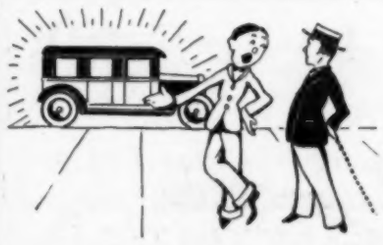
"Have sold and installed in this locality more than 600 Keith Furnaces, and many are in use today, installed in the year 1906. I have not found a furnace with as well designed body or combustion chamber. My business dealings with you have been as satisfactory as your products—the best there is."

Having the **right furnace** to sell is half of the battle.

KEITH
Furnace Company

Des Moines, Iowa

"Always Save Money in the End"



"Buy This Car Because—

You're in the market for a new car. A dealer demonstrates the latest model and makes certain claims for it that leads you to believe it is a good buy. You sign on the dotted line.

After a few months you discover his claims were mostly sales talk. The dealer in turn blames it on the manufacturer. Will you buy another car from this dealer? Not much, and you'll tell your friends to lay off too.

Here's the point we're getting to: This same thing may happen in your business. If you make certain claims for the furnace you are selling, and it fails to make good in use—you're the loser. You lose the good will of your customer and all his friends.

There is no need to take this risk with your business future. For more than 27 years "AFCO" Boiler Plate Furnaces have lived up to their reputation and given the kind of service that was claimed for them by the dealer. "AFCO" Furnaces make satisfied customers and bring you new business.

We will be glad to send you the *proved facts* without obligation. Address American Furnace Co., St. Louis, Mo.

Other Furnaces Come and Go, but "AFCO" Stays and Grows

The Economical

NIAGARA FURNACE

THE Home Owner today demands a heating plant that not only operates successfully but economically as well.

The NIAGARA holds that reputation.

It is built right—sold right. Our Dealer Co-operation Plan assists you to sell it and install it in a way that wins permanent friends.

Ask us about the Niagara Dealer Franchise.

Also Manufacturers of
Monarch Furnaces

THE FOREST CITY FOUNDRY & MFG. CO.
1220 Main Avenue **Cleveland, Ohio.**

The ROBINSON Line

FOR DEALER AND JOBBER

The ROBINSON
Steel Furnace

QUICK ACTION GAS FURNACE

ROBINSON
Heat Distributor

ROBINSON
Smoke Consumer

and

The *ONLY*
METAL CLOTHES CHUTE DOOR made

Write today for complete catalog and special circulars.

The A. H. ROBINSON CO.
MASSILLON, OHIO

"American Seal"
FURNACE CEMENT
Roof Cement — Stove Putty
Plumbers Putty
PAINTS and SPECIALTIES
WILLIAM CONNORS PAINT MFG. CO.
TROY *Established 1852* NEW YORK
JAMES L. PERKINS
Western Distributor
140 S. Dearborn St., Chicago, Ill.

FANNER
STOVE AND FURNACE
TRIMMNIGS
For *Quality* and *Service* use Fanner Trimmings. We operate our own Malleable and Gray Iron Foundries.

Write today for latest illustrated catalog which lists and describes our complete line.

THE FANNER MFG. COMPANY
BROOKSIDE PARK CLEVELAND, OHIO

REPAIRS
for STOVES-FURNACES-BOILERS
Send for our illustrated Order Blanks
NORTHWESTERN STOVE REPAIR CO. *CHICAGO-ILLINOIS*

PATTERNS FOR STOVES AND HEATERS
THE CLEVELAND CASTINGS PATTERN COMPANY
CLEVELAND, OHIO

PATTERNS
FOR STOVES AND HEATERS FIRST-CLASS IN WOOD and IRON
VEDDER PATTERN WORKS ESTABLISHED 1835 TROY, N. Y.

IRON AND WOOD
STOVE PATTERNS
QUINCY PATTERN COMPANY
QUINCY, ILLINOIS

BOOMER

THIS is our latest addition to the Boomer line. We heartily recommend it for your favorable consideration.

The severe tests we have given this furnace have proven its durability. The unsolicited reports we received from users last winter have been most flattering.

For durability, economy, easy to operate, easy to set up and the low price at which we offer this furnace, you will make no mistake in arranging for the agency.

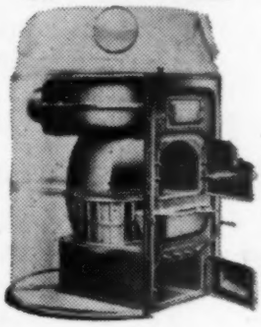
THE HESS-SNYDER CO.
MASSILLON, OHIO
Makers of BOOMER FURNACES for Forty-Three Years

Meeting the Needs of the Western Furnace Dealer

YEAR after year "Standard Line" dealers multiply in number and increase their percentage of the available business. This is mostly due to the completeness of "Standard Service."

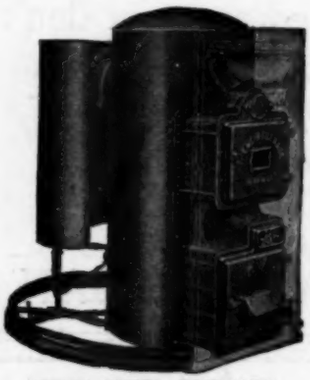
For Instance: From what other source can the Western Dealer obtain such complete selection of modern Warm Air Heaters as the Nesbit; Weir and Stanco Furnaces, 9 styles, and 47 sizes, in all.

Nesbit Moist Heat Furnace



Where else can you send an order for all of the following national brands and be assured of having your order filled complete?

HANDY PIPE AND FITTINGS
"NO STREAK" REGISTERS
H & C—170-190 SERIES REGISTERS
STANCO REGISTERS
WISS SNIPS
PEXTO TOOLS
MAJESTIC CHUTES AND REGISTERS



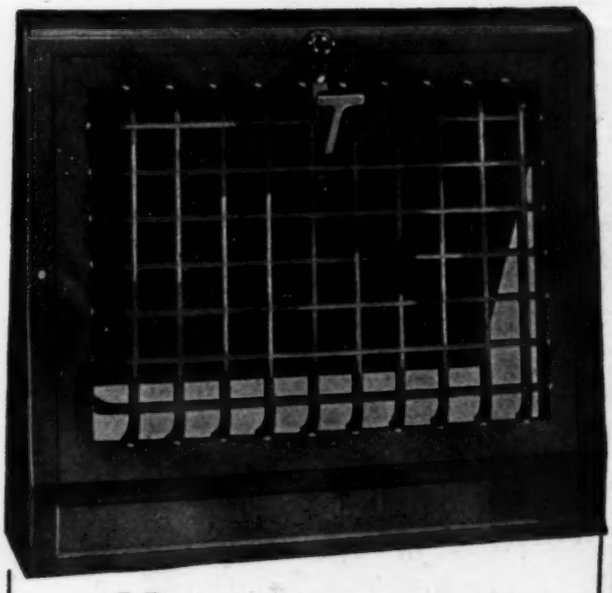
WEIR STEEL FURNACE

Also the staple lines such as steel and semi steel Registers; Wood Grille; Whitney Tools; Asbestos Paper and Paste, ett., etc.

In fact we have everything for the Furnace-man.

STANCO STEEL FURNACE

STANDARD FURNACE & SUPPLY CO.
OMAHA, NEBR.



Have you seen it?

WALWORTH

New Standardized

STYLE B

Baseboard Register

NOT only made throughout in accordance with the rules of the Standardization Committee but it is the *neatest* durable register ever made to sell at a popular price.

Simple, easy and accurate in operation, cast face made of the best iron, finished in all the popular finishes and made in the following sizes:

8x10	**inch**	**2¼**	**base**	**extension**
8x12	"	**2¼**	"	"
9x12	"	**2¼**	"	"
10x12	"	**3¼**	"	"

Study the features of this new register.

Write today for full particulars and prices on the Walworth New Standardized Style B Baseboard Register.

Order some for that next job—your customers will want them.

Made by the makers of Walworth Double Gratings, Semi-Steel Registers, Side Wall and Floor Registers, Ventilators, Borders and Casings Rings.

THE WALWORTH RUN FOUNDRY COMPANY

West 27th Street and N. Y. C. & St. L. R. R., Cleveland, Ohio

Distributors:

ROBINSON FURNACE CO., Chicago, Ill.
HART MFG. CO., Louisville, Ky.
PHILLIPS & BUTTORFF MFG. CO., Nashville, Tenn.

Eastern Representative:

PENN TINSMITH'S SUPPLY CO., Philadelphia, Pa.

Traveling East or West

A restful night on beautiful Lake Erie—to or from Niagara Falls, will add enjoyment to your trip.

Palatial steamers—Unlimited facilities, including large airy state-rooms, excellent dining room service.

Daily May 1st to November 14th—Each Way Every Night between

Cleveland and Buffalo

Leaving 9:00 p. m., arriving 7:30 a. m. (Eastern Standard Time)

Write for new Steamer Schedule between Cleveland and Buffalo via ERIE during July and August

Connections at Buffalo for Niagara Falls, Eastern and Canadian points. Connections at Cleveland for Cedar Point, Put-in-Bay, Toledo, Detroit and points West.

Our new 32-page Tourist Guide with complete information and maps will be mailed free—on request.

Ask your ticket agent or tourist agency for tickets via C & B Line. Your rail ticket is good on our steamers.

The Cleveland and Buffalo Transit Co.
Cleveland, Ohio

FARE $5.50

New Auto Rate $5.00 and up

BOLTS

WE MANUFACTURE A COMPLETE LINE OF BOLT PRODUCTS, INCLUDING STOVE BOLTS, CARRIAGE BOLTS, MACHINE BOLTS, LAG BOLTS, NUTS, COTTER PINS, ETC. ALSO STOVE RODS, SMALL RIVETS AND HINGE PINS, CATALOG ON REQUEST.

THE KIRK-LATTY CO.
1971 W. 85th St. Cleveland, O.

IF there is a tool or machine that you need and you don't know where to get it—

Write to the

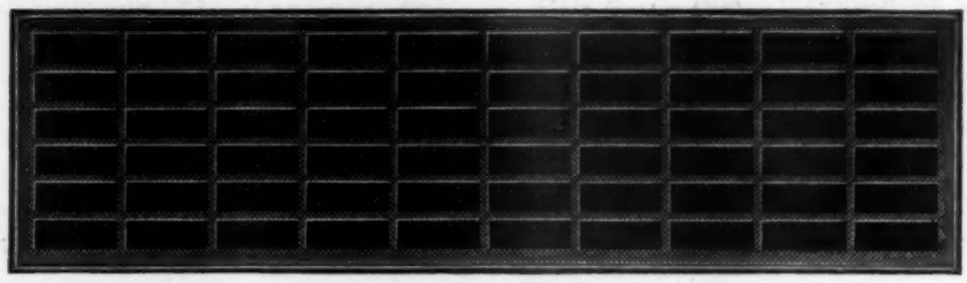
Notes and Queries Dept.

of

AMERICAN ARTISAN

WHEN you write to advertisers please mention that you saw it in
AMERICAN ARTISAN

Another Reason Why "Cobble" Cold Air Faces Sell!



Style C "Cobble" Cold Air Face

THE ever-increasing demand for "Cobble" Cold Air Faces is backed by many forceful reasons. One look at the sketch below shows that. For, because the entire face is covered with tiny cobbles, wear and tear is kept off the surface proper. This results in an indefinite preservation of the finish—and incidentally, providing a face upon which the foot cannot slip. Other features which installers and builders value highly include the rolled edge and narrow rim. This construction eliminates need for recessing floor and makes for snug, even fit. The Tanbo Antique finish is a neutral color that blends readily with practically all interiors. Dealers, therefore, are spared the trouble of carrying a large stock containing several finishes. Made of *cast iron*. Strong and durable—superior in every way to expensive wood faces. Coupon will bring the other reasons why it will pay you to sell "Cobble" Cold Air Faces.

TUTTLE & BAILEY MFG CO.

Established 1846

441 Lexington Ave. New York City

Feet do not touch finish or main surface. Tiny "Cobbles" receive wear and tear—as shown in cross section sketch at left. Style 80 "Cobble" Register made in exactly same way to go with Style C Cold Air Face.

TUTTLE & BAILEY MFG. CO. AA 7/16/27
441 Lexington Ave., New York City.

Gentlemen: Please send me full particulars about "Cobble" Cold Air Faces and Registers.

Name .....

Address .....

Founded 1880

Published to Promote Better Warm Air Heating and Sheet Metal Work

American Artisan and Hardware Record

Sheet Metal Work-Warm Air Heating

Yearly Subscription Price:
United States.....$2.00
Canada $3.00
Foreign $4.00

Published EVERY SATURDAY at 620 South Michigan Avenue, Chicago

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Vol. 94, No. 3. CHICAGO, JULY 16, 1927. $2.00 Per Year.

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Dressing That Window

Sheet metal and warm air heating contractors have labored entirely too much under the impression that the products and services with which they work do not lend themselves readily to display. This is a fallacy that has kept the sheet metal and warm air heating industries from taking their rightful places in the scheme of service rendering industry today. One of the objects which AMERICAN ARTISAN *hopes to accomplish is to show its readers that sheet metal and warm air heating does lend itself easily to many kinds of displays, and that progressive contractors in both industries are doing it every day.*

Your welders are good welders

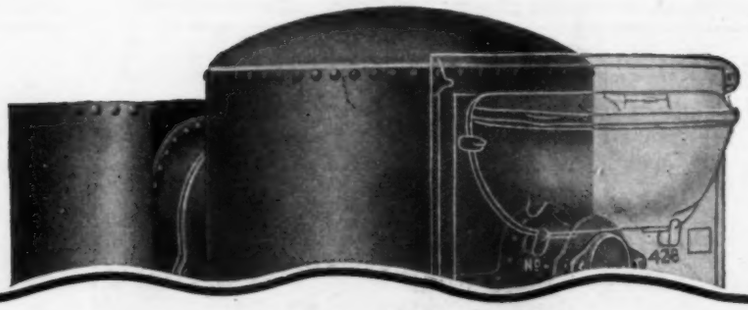
NO ONE KNOWS better than Linde that the average industrial welder is a first-class workman. And it is not in the least uncomplimentary to your welders that Linde service has been developed.

Linde service is designed to supply just those things that a good welder needs most and appreciates most. It keeps him in touch with all the recent developments of welding and cutting. And in a field that is growing so rapidly only a national service organization could make this possible.

Through Linde service men, through the Linde magazine Oxy-Acetylene Tips, through Linde procedure controls, through the thousands of answers to mail inquiries, Linde service is helping the welders of this country to do a better job.

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
General Offices: Carbide and Carbon Building
30 East 42d Street, New York
37 PLANTS . . . . . 107 WAREHOUSES

LINDE OXYGEN



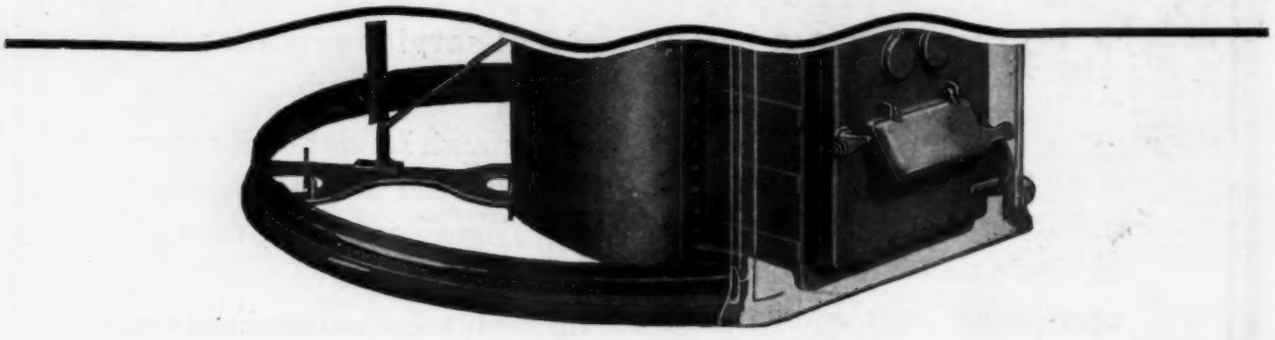
THE tide turned to better warm air heating long ago.

The Meyer Furnace Company recognized this fact over forty-five years ago when the first steel, leakproof furnace was constructed and designed for longer service, cleaner heating and greater economy, and today after numerous improvements, but still of the original design, WEIR stands head and shoulders above all competition.

Not only is it *the original steel furnace,* but WEIR has always been in the lead of new developments in the industry for the benefit of those engaged in it, *including the dealer,* for as a product to encourage better installations and better profits for the dealer, it has never been equaled.

The WEIR Furnace has always been built on a basis of strictly high quality, regardless of price, for there is no compromising with health for the sake of saving a few dollars in first cost of an installation.

WEIR was the first furnace to bear a plate certifying its rating or capacity based on scientific research, advocating installation according to the Standard Code, and covered by a guarantee minus the usual "exceptions" found in other guarantees.



THESE are but a few WEIR Facts. Others of equal interest and importance to you, together with the complete story of the furnace that will enable you to overcome, instead of continuing to try and meet competition, will be found in our "Book of Facts," which is yours for the asking. The WEIR Book of Facts" has been a stepping stone to better business for many a dealer, and can prove the same to you. Send for a copy and get the "formula" for the cream of the heating business of your community — or we'll be glad to have a representative call, if you prefer.

The MEYER FURNACE Co

Peoria-Illinois

American Artisan and Hardware Record

Vol. 94. CHICAGO, JULY 16, 1927 No. 3.

Attractive Sheet Metal and Warm Air Heating Shop of Jac Groeschel, Milwaukee, Wisconsin, Showing What Can Be Done with a Small Amount of Money. (See Next Page for Appearance of Shop Before Remodeling.)

Jac. Groeschel Sheet Metal & Furnace Works Employs Progressive Sales Methods

Milwaukee Installer and Sheet Metal Contractor Makes Modern Sales Emporium Out of Old Shop

A GREAT but silent revolution is taking place in the merchandising methods of warm air heating and sheet metal contractors. Men in these two industries in all parts of the country are beginning to recognize the value of attractive window displays and clean, well arranged sales rooms as important adjuncts to sales.

The accompanying illustrations show how a Milwaukee sheet metal and warm air heating contractor, with a little thought, was able to make a real attractive sales room out of the most ordinary looking place of business.

Today the Jac. Groeschel Sheet Metal & Furnace Works is one of the most progressive firms of its kind in Milwaukee, carrying a stock valued at about $25,000.

Mr. Groeschel was born in West Bend, Wisconsin, and was 14 years old when he started in the tinner's trade. He worked for several tinners in West Bend and then came to Milwaukee, where he worked for a sheet metal company. "I had worked for them a considerable length of time," Mr. Groeschel said, in relating his early experiences, "when work became quite slack and it became very hard to get material for the jobs we did have. As there was nothing really for me to do, my boss told me to take off for several days until the material we needed had arrived. It happened that I was just married that year and I needed all the money I could get.

"Well, the time dragged on and

still the company I was working for did not have enough to do, and I felt that I couldn't remain idle much longer, so I determined to see if I could pick up some business of my own. I had known a number of people in this kind of business during my work, and it wasn't long before things began to pick up and I got a number of jobs. I then asked my former employer if I could do the work in his shop and he said it would be all right. As time went along the jobs began to come in pretty fast for me."

That was the start of Mr. Groeschel's business and when opportunity knocked, Mr. Groeschel was not far away; in fact, he made it knock. There was an old couple living in a small house on the site of his present modern showroom and factory, at 1513 Lloyd street. From these people Mr. Groeschel secured an option on a piece of land 50x30 feet at $25 a year and opened a small sheet metal and tin shop there.

After he had been in business for several years, it was Mr. Groeschel's intention to do galvanized iron work, but he had too much trouble getting trained mechanics, so he remained in the sheet metal field and specialized in furnace work. He also does all kinds of roof work and sheet metal repair jobs.

During the course of his thirty years of sheet metal work, Mr. Groeschel has absorbed a wealth of knowledge relative to operating a successful business in this line of work. "Honesty, good work and the ability to give your customers just a little more than they bargained for is the best of advertising," according to Mr. Groeschel, and that this policy of his has been tried and met with success can be proven by the fact that during his business he has had to expand his factory about six times, until it now covers its present area of about 50x 120 feet of floor space, two stories high.

Last fall Mr. Groeschel remodeled his factory and turned the front of it into a first class showroom, making it one of the most modern and really attractive places of its kind in the city. Although the factory is not located on a busy street, and Mr. Groeschel gets many of his orders over telephone from his regular customers.

The lower half of the front of the showroom is of brick, while the top is of frame with attractively shuttered windows in green. The show window is directly in the center of the lower story with round leaded windows on either side. The front of the building looks almost more like an attractive residence than a business building and harmonizes nicely with the surrounding residences.

On an average over the year, Mr. Groeschel has about 12 men working for him. The company has three trucks and two lighter cars for field work. Despite the fact that competition has grown keener and Mr. Groeschel's factory and show room are not located on one of the city's leading thoroughfares, he has by building up good will through his fair business methods installed thousands of his furnaces in Milwaukee homes and thus established regular customers. These customers in turn advertise the firm's good work to their friends, and it is through doing good work and giving good service that he has built up his business.

Mr. Groeschel has handled the Richardson & Boynton furnace for 26 years and is the oldest jobber of this furnace in this section of the state. As the oldest jobber of this furnace in this section of the state together with seven other of the oldest jobbers of the furnace in the state, Mr. Groeschel is making an offer to the owner of the oldest warm air heater in this section of the state, to give him a new heater in exchange for the old one. This offer is being carried on throughout the state and seven heaters will be given away in all. Mr. Groeschel is always interested in co-operating in movements of this kind, and does considerable advertising of his own, in order, as he puts it, "to keep the name of his company before the younger generation."

The company has also jobbed the Abram Cox furnace for the past 17 years, and also handles the Rybolt and the Modern Novelty Furnace.

Shop of Jac. Groeschel as It Looked Before It Was Remodeled into its Present Attractve Appearance.

Mr. Groeschel has built up a wonderful trade during his thirty years in business, and yet he believes in advertising as the best method of bringing his business before the coming generation. Besides doing advertising in papers and magazines and co-operating in offers such as that carried on by the Richardson & Boynton Furnace Company, Mr. Groeschel gets out little stunts now and then to keep his name before the public. Recently he had a number of windshield wipers made with his name, address and telephone number on them which he distributed.

The fact that Mr. Groeschel, starting as he did, has made such a

thorough success of the business is indeed gratifying.

Despite the fact that he has a business which is well established, he is progressive and looks to the future. There are many sheet metal shops in the city, some located on the finest business streets, and yet a person passing by would not look at them twice. Mr. Groeschel has a shop and show room which is pleasing in its simplicity and yet it cannot fail to attract. It is the kind of shop which lends a sort of air of reliability to the company itself. It does not look like some shiftless or haphazard company were housed there, but leads the passerby to think, "there is a reliable firm."

It has a dignity that says "we know our business."

And the best part of Mr. Groeschel's entire business career is that during almost the entire thirty years he has been a steady subscriber to AMERICAN ARTISAN. "I have been asked to subscribe to other trade papers in my field, but AMERICAN ARTISAN has served me faithfully and met my requirements at all times," he stated. It seems as though this were a case where both the paper and subscriber have met with a steady success through the years, and a well earned success in both cases.

William C. Grolbert's Method Would Not Apply in Chicago

Up Against a Stiff Proposition Selling Furnaces in Chicago

By SAM J. SORENSEN

IN reply to Mr. William C. Grolbert.

In reading over your article of June 25th issue of AMERICAN ARTISAN I wish to state:

Mr. Grolbert, I can see through your method of figuring very plainly, but I think it is somewhat confusing to the average installer.

You can, no doubt, use that method in Ohio, but in Chicago I am afraid you would find it hard sailing to put over a selling price as large as that, doing new work.

I might be wrong in your way of doing business in Ohio, but give me my 25 per cent profit over my overhead at my way of figuring and I would be a rich man in a few years.

Consider this, Mr. Grolbert, that they are putting in furnaces in Chicago for as low as $145 in a five-room bungalow and molded box gutters for 18 cents a foot. You can readily see that we are up against a stiff proposition.

You take an installer, installing say 200 furnaces a year, at my way of figuring would look like this:

Labor and materials for one furnace	$200.00
Plus 10 per cent for overhead, if that is the overhead	20.00
	$220.00
20 per cent for profit	44.00
	$264.00
5 per cent for safety	13.00
	$277.00

Two hundred times a profit of $57 is $11,400 a year, which would make a darn nice little piece of change for a year's business, I should say.

Who Will Help?

Please send me information as to how to lay out range canopy straight on the back with mitred ends.

How can I make an air chamber to fit in the front of a life boat?

A SUBSCRIBER.

When I say 10 per cent for overhead I do not mean that a business can be run on that margin of overhead, because there are very few that can, if any, but why I use that figure is because it is easier to understand and figure out.

I took the question up with several expert accountants and they said my method was all right, only I should put the overhead on the selling price, which figures the same exactly.

Labor and materials	$200.00
20 per cent for profit	40.00
	$240.00
5 per cent for safety	12.00
	$252.00
10 per cent overhead	25.20
	$277.20

Now with even figuring a 20 per cent overhead at my way of figuring and the accountants' way you will see it is the same.

Labor and materials	$200.00
20 per cent overhead	40.00
	$240.00
20 per cent profit	48.00
	$288.00
5 per cent safety	14.40
	$302.40
Labor and materials	$200.00
20 per cent profit	40.00
5 per cent safety	12.00
	$252.00
20 per cent overhead	50.40
	$302.40

Showing Development of Pattern for Short Transforming Elbow

Disadvantage in This Type of Transition Is That It Creates Air Turbulence

By O. W. KOTHE, Principal St. Louis Technical Institute

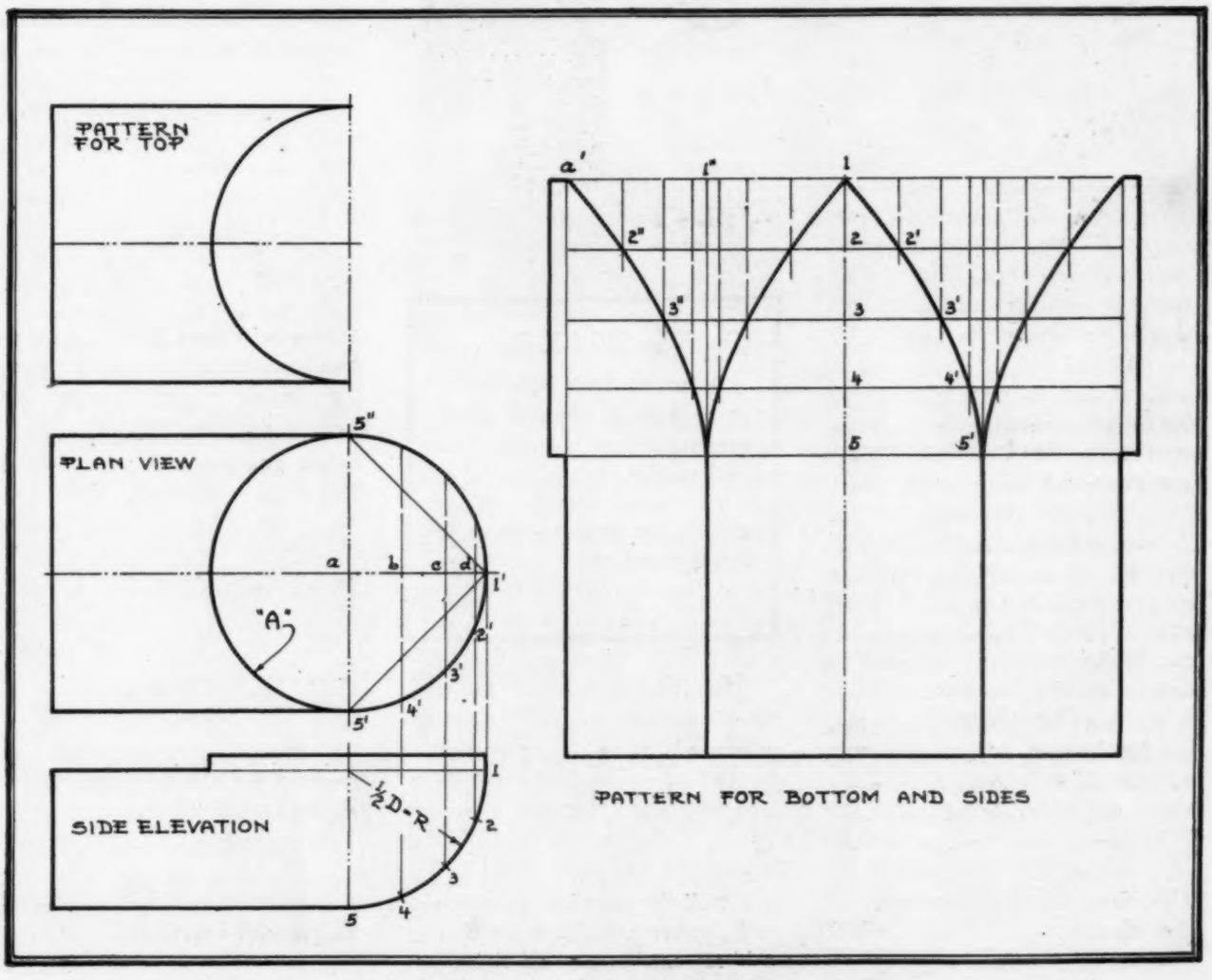
IN pipe work where duct must be transformed from round to rectangular in a short space, a design similar to the one we show in this plate is often met with. It is used in furnace work, in some heating work and also on board ship in a more popular way. Its disadvantage is that it will produce considerable friction, owing to the small radius, which causes the air to make a short turn.

Possibly the side elevation view is first drawn giving the width, and then with the dividers describe the heel equal to one-half the radius of the round pipe. The plan view can then be developed by describing the circle and drawing side lines tangent to it.

This makes it possible to create the bottom in one piece and to develop a miter line for the sides so that when they are brought around they will fit together, as our plan and elevation indicates.

To set out a pattern, we first draw a vertical line and on this we measure the girth from the side elevation, from 1 to 5, and set this as 1 to 5 in pattern. Draw horizontal lines and then from each point in side elevation, erect lines into plan, thus cutting circle, as in points 1′-2′-3′-4′-5′. Now if we pick the line from center line of plan, as a-b-c-d-1′, from plan and set them over on the top line of pattern, as a′-1″-1′, etc. By dropping lines from these points we establish miter lines, as 2′-3′-4′-5′, also 2″-3″, etc. When lines are sketched through these intersections you have the pattern.

The top piece is made separately



Patterns for a Short Transforming Elbow

and is a direct reproduction from plan as shown at top of drawing. But the pattern for the bottom and sides is bent up on the bending lines and heel 1′-5 is rolled as the curve in the side elevation shows, while the points for the side pieces are bent round and will then fit the miter line 1′-5′, possibly the riveted joint is the most acceptable, it being flexible and can be easily handled. The double seam joint can also be used and whichever is used laps must be allowed for seaming.

Whitney Metal Tool Company, Rockford, Illinois, Buys Additional Factory.

The Whitney Metal Tool Company of Rockford, Illinois, has purchased the three story building, 60 by 120 feet, known as the Wait Talcott Building, which adjoins their factory building No. 2.

The company states that they now have 218-foot frontage on Race and Forbes Streets, which increases their manufacturing space to about double. They also have just completed a new stockroom and office building.

The company states that the need for additional space for the manufacture of punches and shears was imperative and that they were fortunate in being able to acquire this adjoining building.

Atteberry Brothers Enter Sheet Metal Business at Mercedes, Texas

Clark and R. B. Atteberry have entered the sheet metal business at Mercedes, Texas. Their address is P. O. box 886, and they will do all kinds of sheet metal contracting and they will push the automobile radiator and fender repairing lines.

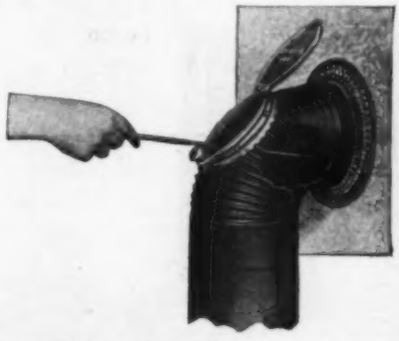
The Atteberry brothers are sheet metal contractors by instinct. Their father is H. E. Atteberry, formerly of Springfield, Illinois, and Victoria, Texas, while their grandfather and uncles on the Moorhead side of the house were all sheet metal men before them.

These men invite correspondence from supply houses and from individuals who may be interested in them or the Rio Grande valley.

New Safety Flue Device Enables Easy Cleaning of Furnace and Stove Flue Pipes

A new device for attaching to stove and furnace flue pipe and elbows is claimed to be a practical aid in prevention of flue fires.

The device, a simple collar and door arrangement, attaches at the bend of the elbow or in a straight piece of furnace smoke pipe and allows for easy access of scraper making the raking of soot to soot pit of stove or furnace a simple and efficient process. The manufacturers of the Safety Flue Device claim that it does away with the



The Safety Flue Device attached to elbow of stove pipe

necessity of taking down pipes, that it takes away the muss and fuss from the job of cleaning flue pipes and greatly removes the danger of fire from soot laden flue pipes.

They state that the installation of this device prevents the home owner from gross negligence of flue pipes because of the ease in which it allows proper and efficient cleaning.

They also claim that in keeping flue pipes clean the customer gets more satisfactory service from the furnace and that the pipes will last longer.

The Safety Flue Device Corporation of Decatur, Illinois, manufacturers of the article, claim also that it prevents pipes from burning out, that by opening the cover red hot pipes may be cooled and that it also serves as a check draft. Further information and specifications may be obtained from the manufacturers.

Pattern for Metal Canoe

From L. E. Bovell, Paris, Illinois.

Kindly inform me where I can get a pattern for a metal canoe.

Ans.—H. F. Thompson Boat and Pattern Works, Decorah, Iowa.

Smith Maltese Water Heater

From Waterman-Waterbury Company, 1121 Jackson Street, North East, Minneapolis, Minnesota.

Please advise who makes the Smith Maltese water heater.

Ans.—Alamo Heater Company, 6143 Wentworth Avenue, Chicago, Illinois.

High Pressure Gasoline Burner

From M. G. Combes and Company, Shellsburg, Iowa.

Please advise me where I can obtain a powerful gasoline burner that burns gasoline under high pressure. I want it to heat a steam cooker.

Ans.—Daniels Gasoline Lighting Company, Paris, Illinois, and Doud Lighting Company, 163 Curtis Street, Chicago, Illinois.

Total Eclipse Hydrant

From Murphy's Plumbing and Tin Shop, Flat River, Missouri.

Kindly advise me who makes the Total Eclipse Hydrants.

Ans.—American Foundry and Manufacturing Company, St. Louis, Missouri.

Who Manufactures the Trojan Gas Furnace?

To AMERICAN ARTISAN:

Can you advise us who manufactures the Trojan gas furnace? It is made in Oakland, California.

STIGLITZ FURNACE COMPANY.
123 West Main Street,
Louisville, Kentucky.

Who Makes "Advance" Tinner's Snip?

To AMERICAN ARTISAN:

Please advise me who makes the "Advance" tinner's snip.

B. J. MALERICH,
Arrowhead Sheet Metal Company.
International Falls, Minnesota.

Copper Shingles Protect C. M. Baird Residence, Evanston, Illinois

Dwelling Also Equipped with Copper Gutters and Downspouts—Metal Window Sash a Feature

THE sheet metal industry in all of its phases is making great strides forward not only to resuscitate, but to increase the use of its products by discovering new ways in which sheet metal can be made to serve mankind.

Architects who formerly were more or less skeptical about specifying sheet copper, sheet steel or sheet zinc do so now with a freedom and wholeheartedness that the industry has not seen in this country before.

Architects are becoming educated, due to the collective efforts of the sheet metal industry, to the fact that sheet metal when properly used and properly applied can be relied upon to a greater extent than can competitive materials. They are finding that sheet metal in any of its forms permits a wider range of possibility for ornate design, because of its lightness and ready pliability, than do other materials.

A new wrinkle in copper shingles, at least to the midwest, are the 12-ounce Rookwood copper shingles, manufactured by the Edwards Manufacturing Company, Cincinnati, Ohio. The introduction of these shingles, at least in the Chicago area, as far as can be learned, was made on the roof of the new C. M. Baird residence, now being erected on the Southeast corner of Crain street and Ridge Boulevard, Evanston, Illinois, by the McCann Company, General Contractors, 1223 Oak Avenue, Evanston, Illinois. About thirty squares of the material was used.

Above—Rear View of C. M. Baird Residence, Crain Street and Ridge Avenue, Evanston, Illinois. Below—Front View. This House is Equipped With Copper Shingles.

The architects who specified the Rookwood copper shingles and copper for the guttering and downspouts were Morison & Wallace, 134 North La Salle Street, Chicago.

The sheet metal contractor who laid the roof and other copper work was Frank Staar & Sons, 1473 North Halsted Street, Chicago.

Another way in which metal has proved itself of service in the dwelling house building world is in the metal window sash field. The Baird residence is equipped throughout with Hope metal window sash.

The Frank Staar & Sons sheet metal works has long held an enviable position in the foremost ranks of the sheet metal building world. Some of the largest sheet metal jobs in the city of Chicago are counted among the many successful accomplishments of this progressive firm.

The operations of this company are not confined to the city of Chicago alone. They have gone as far west as Salt Lake City, Utah. Monuments of their good workmanship are to be found in practically all the cities within a hundred mile radius of Chicago. To the credit of the sheet metal contractors in the small towns, officials of the Frank Staar & Sons sheet metal works say that out-of-town work is now becoming unprofitable, because of the improvements in equipment and the greater ability of the sheet metal contractors in the small towns. However the company has plenty of work in the city of Chicago itself to keep its well equipped organization in full time operation.

On the illustration of the front of the house the reader will note a small square white space just over the front entrance. This is the sign of the sheet metal contractor who did the work. This is an instance of good advertising judgment and they find that it pays well. In this case the entrance faces Ridge boulevard where a great deal of automobile traffic passes daily.

The Editor's Conning Tower

Brighter Outlook Ahead for Indiana Sheet Metal Men

INFORMATION has reached our office that the Indianapolis Sheet Metal Contractors' Association has gone into the Indiana State Sheet Metal Contractors' Association. If this is true, and it comes from a reliable source, we want to congratulate both the Indiana state men and also the Indianapolis sheet metal contractors who are members of the local association.

This is a real triumph for both organizations. These men have been at loggerheads with each other for a long time, be the cause whatever it was. For that reason progress within the Indiana organization has not been what it should have been under ordinary circumstances.

The fact that these men have gotten together and ironed out their several difficulties sufficient to permit them to work together in harmony augurs well for the sheet metal industry both in and out of Indianapolis.

Let us hope that the Indianapolis sheet metal contractors and the Indiana state body will prosper better for their association together than they have ever been able to do trying to work separately. The sheet metal men outside of Indianapolis need the support of those within the Capitol city, and it certainly is good news to learn that they have at last come to a point where they can get together and work out their several problems in harmony and unison. Both the state body and the Indianapolis body are to be congratulated.

Installers Policing the Warm Air Heating Industry

THE idea back of the National Warm Air Heating and Ventilating Association's Standard Code symbol, as we understand it, is to loan to the dealer of warm air heating systems a device with which he can tie up in his home town to the national association's advertising campaign; to give him a symbol for use on his window showing the public that he has pledged himself to install his warm air heating systems in accordance with the Standard Furnace Code.

This method of bringing warm air furnace installers into line on the use of the Standard Furnace Code is an excellent one and one that should be hailed with joy by every warm air furnace installer who stands on principle in his own business. The one big difficulty with this method and symbol lies in its application. It seems that because a so-called warm air furnace installer puts his name on a card saying that he will put the systems he sells in in accordance with the Standard Code does not mean that he will actually do so.

Therefore, if a man pledges himself to use the Standard Furnace Code only for the purpose of putting himself in line to receive the inquiries from his town which go to the national headquarters, or because he thinks he can get some extra business in this manner, with no intention of complying with his agreement to install according to code, he is tearing down the good work which the National Association has accomplished. The warm air heating business fell off in the first place because the practices within the industry itself were such that the public lost faith in that method of heating. If a man carrying a Code symbol on his window puts in a warm air heating system that is not a Standard Code job, the home owner is surely going to lose faith in not only the symbol, the installer, but in the industry itself. He is going to say, "That's a lot of bunk."

It's up to the furnace installers in every city, town and hamlet in the United States to see to it that that Code symbol is being lived up to. They must do this for their own protection and for that of the industry of which they are a part.

It is a physical impossibility for the national headquarters to act as a policeman, to stand over every warm air furnace installer in the country with a club and say to him, "You must put these installations in in accordance with the Standard Code or we will take the symbol away from you." So about the only way that the national headquarters has of finding out who the installers are who are not living up to their agreements with the national association is to depend upon other warm air furnace installers in the town where the offender resides to protect their own interests; to let the national headquarters know who the offenders are.

A case came to light in Chicago just the other day where a warm air heating contractor made an agreement with a home owner to install a warm air heating plant in accordance with the Code. The installation went in supposedly according to Code. The home owner happened to be talking to a second furnace installer who is known throughout the warm air heating trade in Chicago as a heating man who knows his business. This second installer asked the home owner if he knew how to determine whether he had a Code job or not. They went over the installation together and found it short of a Code job in several respects. The first installer had agreed to make a Code job and the home owner made him come through with an adjustment, bringing the job up to specifications.

In this case the installer had been caught red-handed and was compelled to "crash" through by the home owner. But how many times does this happen? The men on the scene of action who have the interests of the industry at heart must watch these instances to protect themselves.

The prospect who is sent to you for a Code job is *sold* on warm air heating. He wants a good job, is willing to pay for it and the warm air heating contractor who can't see that it is good business to give him a Code job at a good profit is certainly lost.

How to Locate and Correct Smoke Chimney Defects

Burden of Proof That Chimney Is Deevitcef Will Fall Upon Furnace Installer

By John S. Walker, National Heatcraft Institute, Peoria

SOME EXCELLENT articles on draught gauges and their use have appeared in the trade journals recently. The progressive furnace dealer is now able to definitely prove whether a chimney is producing sufficient draught.

The customer, however, is not particularly interested in your telling him that he has a poor chimney. He as a rule does not understand draught and often figures that you "are passing the buck" if you blame his trouble on the chimney and let it go at that.

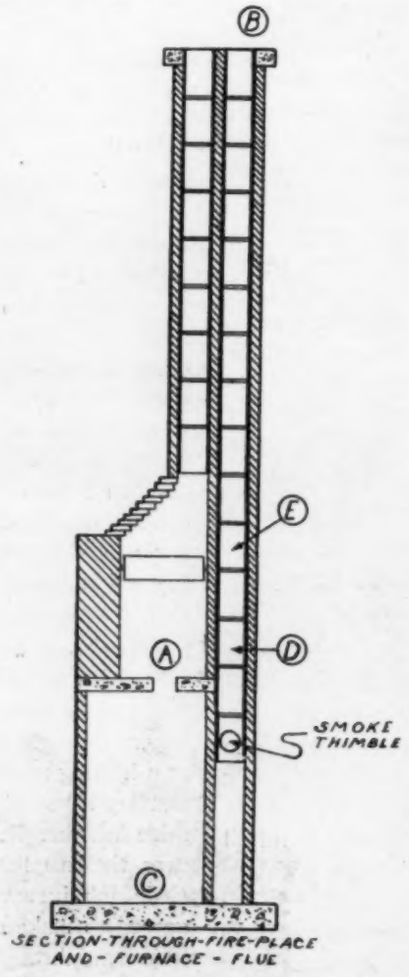
All the average customer understands is results; the furnace works or it does not work. The brick mason who built the chimney probably does not know anything about heating and never will. The result is that you must not only find that the chimney is defective, but prove exactly where the mistake was made.

Perhaps the thing that is giving the most trouble in houses now being built is the fact that the chimneys are often not absolutely tight. Where this occurs in a single flue the trouble is easy to locate and remedy. Where the fireplace flue and the furnace flue come side by side, the trouble occurs most often and is more difficult to locate and remedy.

A simple way to locate the exact point at which the trouble occurs is by what might be called the "smoke test." Coal dust is thrown upon the furnace fire so that a heavy black smoke is produced. One person now goes to the first floor fireplace, opens the damper and looks up the flue (Point A).

A second person goes to the roof (B) and upon receiving signal closes the furnace flue off tightly with an old sack. Jets of black smoke will indicate to observer at (A) exactly where the leaks occur. Repeat the experiment several times so that you locate every one of them.

Now open the ash dump and look into the space below. An electric



SECTION-THROUGH-FIRE-PLACE AND-FURNACE-FLUE

light has previously been placed at point C. The chimney is again blocked for a few moments at a time and the exact location of any leaks noted.

If any part of the chimney has been constructed of hollow tile or concrete foundation blocks (these materials are sometimes used, although they never should be), the chimney should be tested from top to bottom from the outside in the manner previously mentioned.

You are now able to show the home owner where these defects occur. When he sees them himself he will know that you have not been just giving him an alibi. Since you did not build the chimney, it is not up to you to fix it unless you are paid for it.

In case you are not equipped to do the work and the home owner employs other parties, you should insist that he personally be present before the workmen leave the job and conduct a smoke test similar to the one you have performed.

In case you are equipped to do the job, the following suggestions will be helpful:

Tile Lined Flue. Where double flues are lined with tile, the mason often builds up the brick work first about the length of a tile and then drops it down into place. Where this method is used, usually every joint leaks.

Where your smoke test has

This is the first of a series of articles on good warm air furnace installation practice written by Mr. John S. Walker, head of the National Heatcraft Institute, Peoria, Illinois. It describes not alone the method of determining whether a smoke chimney is tight, but also outlines a way to seal up tile lined flues without renewing the entire chimney.

The second article of this series will concern itself with "An Old Fireplace Converted Into a Furnace Flue."

The National Heatcraft Institute offers a course of instruction in the science and practice of warm air heating.

shown this to be true, estimate about where the middle of the third tile occurs and cut a hole (from the outside) (D) large enough to admit your arm to work freely. With your fingers you can now reach the joint above the one below. Press the joints full of mortar. Be sure to fill all the corners as well as sides.

Now measure up the length of two tiles and cut another hole (E). Fill joints as described above and proceed in the same manner until all leaks have been blocked.

In closing up all the openings that have been cut, care should be taken to fill them tight and not let anything extend into the chimney.

Note: If the division wall between the two flues had been built tightly, the leaks at the tile joints would not have had such a bad effect. However, the division wall is usually built carelessly, with many leaks between the two flues.

Humidity Drying for Furnace Cement Saves Time and Money

In connection with the use of Insa-Lute (furnace sealing paint) the following synopsis of a treatise on "Humidity Drying," prepared by C. Fred Sauereisen, the inventor of Insa-Lute and other technical products, should be carefully considered.

Humidity drying is applied to many lines but in reference to cements it is merely starting the drying before a hard surface forms on the surface or exterior of the cement (caused by air drying, which has proved to be the wrong method).

If the surface of the cement gets hard, the pores close; now before the inner dampness can escape it is necessary for these pores to open again, as the water cannot escape through a hard crust, and if you place a hot fire in the furnace, even months later, you generate steam that explodes and blows off chunks of cement, causing a leaky furnace.

To overcome this uncertain drying condition, start the drying immediately after the furnace is placed by burning only one piece of wood or place an electric heater in the furnace, taking care that the temperature does not get hot enough to boil water or generate steam. Several hours of this controlled heat will dry the cement throughout.

Now when the furnace cement is thoroughly dry, Double Seal the furnace by painting Insa-Lute over the dried furnace cement.

The Technical Products Company, Pittsburgh, Pennsylvania, manufacturers of Insa-Lute cement, state that Insa-Lute may also be used for sealing leaky furnaces without resetting. Insa-Lute may be obtained from Follansbee Brothers Company, Pittsburgh, Pennsylvania.

You Can Duplicate This Fine Publicity Stunt

The next time your town has a parade in which the business men are invited to participate with floats advertising their merchandise or service get in on it—it is good advertising.

The warm air heating business is underadvertised and this is a good method for the live warm air heating contractor to do some dominant advertising without excessive investment. The float illustrated was used by the Henry Foundry and Furnace Company of Cleveland, Ohio, on Mardi Gras night held recently in Cleveland. The company states that this float was seen by a crowd estimated at 300,000 strung along the line of march.

The company's new Series "C" Moncreif Furnace was used and both the furnace and the fittings were gilted, making the display show up very brightly.

The float was festooned simply but yet it proved unusually attractive because its simplicity formed a pleasing frame for the furnace display. Charles Sharp, the young son of H. S. Sharp, Cleveland sales manager of the company, decked out in white, moved about the platform distributing needle cases and pencils, souvenir reminders of Moncreif Furnaces.

The retailer will do well to notice also that the souvenirs passed out were of a nature that enables them to be kept for a time at least, thus getting a better measure of advertising.

Clip this photograph and article and file it with your advertising ideas. The next time you have an opportunity to use a parade float dig it out and you'll find that you can make an attractive float and get your business before a large receptive audience all lined up waiting to look at your advertising.

Be prepared beforehand to pass out souvenirs that will advertise your business and that the people will save for a time.

Furnace float used by the Henry Foundry & Furnace Co., of Cleveland, Ohio

Random Notes and Sketches
By Sidney Arnold

"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.

Dave Farquhar had just closed a pretty good order for Tee Bee registers and thought he would celebrate by having a real good dinner. As the waitress glided up to his table at the Book-Cadillac Hotel, he put on his most seductive smile and said:

"Nice day, little one."

"Yes, it is," she replied. "And so was yesterday and my name is Ella and I know I'm a pretty girl and have blue eyes and I've been here quite a while and I like the place and don't think I'm too nice a girl to be working here.

"My wages are satisfactory and I don't think there's a show or a dance in town tonight, and if there was I wouldn't go with you anyway. I'm from the country and I'm a respectable girl and my brother is the cook in this hotel and he was a college football player and weighs three hundred pounds.

"Last week he pretty nearly ruined a twenty-five dollar a week salesman who tried to make a date with me."

* * *

M. E. Ticen of the XXth Century Heating Company has the reputation of being one of the best salesmen in the field. One day in a confidential mood, however, he told me what sold his first furnace—

"Laughed at all of Mr. Jones' jokes; told Mrs. Jones she couldn't have a daughter that old; told Susie she looked like Mary Pickford; told Willie Jones he had a build like Dempsey; said the Jones' baby took after both parents—and only smiled when the Jones' Airedale nipped him."

* * *

"Did you run when he started shooting?" asked George Robinson of his colored chauffeur.

"Ah don' rightly reclec," replied Jasper, "but Ah reckon Ah must o' been travelin' right along, 'kaze de bottom o' my feets is full of buckshot."

* * *

J. B. Sauer, Illinois Auxiliary Treasurer, who in his spare moments sells Weir furnaces, for some reason or other always has a good stock of Scotch stories on hand. The last time I saw him, this is the one he pulled and I can't resist the temptation to pass it along:

Jake had served the firm faithfully and well for twenty years. The boss, who was Scotch, thought it time to recognize Jake's value to the business in some tangible form. So he called Jake into the back room and warmly praised and eulogized him.

"In token of my appreciation," remarked the canny Scot, "I have resolved to reward your faithfulness with a check." Jake began to think in terms of motor cars and diamond shirt studs.

"I hope that you will continue to be diligent in the interest of the shop," continued the boss, "and next year, if you continue to show good results"—the delighted Jake began to have visions of a partnership—"next year, if everything goes all right, bring the check to me and I will sign it."

* * *

A. W. Glessner (no need to tell who he is) has justly gained the reputation of being a real globe trotter. Charlie Glessner says A. W. told him the following story after one of his many ocean trips:

The steward stood at the gangway of a ship and kept shouting for the benefit of the arriving passengers:

"First-class to the right! Second-class to the left."

A young woman stepped aboard with a baby in her arms. As she hesitated before the steward, he bent over her and said in his chivalrous way:

"First or second?"

"Oh!" said the girl, her face as red as a rose. "Oh, dear, it's—it's not mine."

* * *

The Scotch seem to be in the limelight this week. Our old friend Roy Harrison, the fellow who was President of the Illinois Travelers' Auxiliary last year, furnishes this Scotch story:

"Did you ever hear about the Scotchman who just went insane?"

"No," what was the matter?"

"He bought a score card at the game, and neither team scored."

* * *

If you know of any humorous situations in which you or your friends have found themselves, tell me about them. Others want to hear them, too.—Sidney.

* * *

Here's an opportunity for sheet metal and warm air heating men to check up and see if they measure up to the standard of a gentleman. The true gentleman is the man whose conduct proceeds from goodwill and an acute sense of propriety, and whose self-control is equal to all emergencies; who does not make the poor man conscious of his poverty, the obscure man of his obscurity or any man of his inferiority or deformity; who is himself humbled if necessity compels him to humble another; who does not flatter wealth, cringe before power or boast of his own possessions or achievements; who speaks with frankness, but always with sincerity and sympathy and whose deed follows his word; who thinks of the rights and feelings of others rather than his own; who appears well in any company and who is at home when he seems to be abroad—a man with whom honor is sacred.

* * *

Harvey Manny Sighs for His Tillie!

My tYpust is on her vacation
My trypist's awau fpr a week
My typudt us in hwr vscarion
Wgile thse damn keys plsy hude and secj.

Cjoras:
Oy, breng boxk, bting bzck,
Brung becj mub'Onnie ti my, tp mr;
B(&ng b&xj,b 6ng bicx,
Bjing bozk m% beInio-o- mx oh helk!
Oh, Helk!

L. E. Glaza Finds Furnace Cleaning Excellent Key to Waterloo, Iowa, Basements

Much Repair and New Furnace Business Obtained in This Way

EVERY warm air heating contractor knows that there is a great deal of repair and new furnace installation business to be had in his own city, but the problem which constantly confronts him is, how to get into these basements and prove to the home owners that the repairs or in many cases whole new heating units are necessary, in order to make the system efficient. And this must be done in a diplomatic way or the sale is entirely lost.

Of course, practically all progressive warm air furnace installers employ the house-to-house canvas method, which is worth while, but this method has its difficulties. In the first place, the solicitor is almost compelled to ask the question, "Do you need any furnace repairs?" To which he invariably receives "No" for a reply, simply because it is the easiest way out. So the problem remains, how are we going to get into those basements in the first place, in order to prove to the home owner that the repairs are necessary?

Here's a Cellar Door Opener

If every basement door in town were open to the furnace man, he could doubtless find pretty much the matter with every furnace he would inspect, just as the dentist might easily find something wrong with the teeth of most of us if he were permitted to open our mouths.

L. E. Glaza, Waterloo, Iowa, is one warm air furnace installer who has found the key to the Waterloo basements to be cleaning furnaces.

Illustration Showing a Portion of the L. E. Glaza Sales Rooms at Waterloo, Iowa. Note the Uniuqe Feature Mr. Glaza Has Inaugurated of Listing the Names of His Warm Air Furnace and Sheet Metal Customers and the Dates the Work Was Done.

Warm Air Heating System Cleaning Outfit Used by L. E. Glaza Company, Mr. Glaza Has Found This Method to Be a Wonderful Opener of Basement Doors for the Inspection of Furnaces and Getting Furnace Repair and New Business.

By offering this service he is able to get a hearing. Once inside the basement, he can then stress the increased efficiency of the old heating plant when thoroughly put in order or replaced by new if beyond the stage of repair.

Stresses Importance of Thorough Cleaning

The particular service he offers is complete, thorough cleaning of the furnace, including the pipes at a distance from the dirt producer.

The ordinary method of dirt removing is prone to scatter dirt about the basement, and, in fact, doesn't remove all the accumulation from the pipes. Mr. Glaza's salesman explains that he uses a suction cleaner, which takes all the soot out of the furnace and out of the pipes. He even goes upstairs and runs a tube down the register opening and cleans all the dust out of the pipes.

An explanation of why a thorough cleaning of the furnace every year or two is a real economy for the householder is one of the best methods of getting into the basement, in the opinion of Mr. Glaza.

L. E. Glaza, Proprietor of the L. E. Glaza Company, Waterloo, Iowa.

The immediate attention-getter is the statement that the accumulation of soot prevents radiation of heat. In other words, every layer of non-conductor makes just that much more of coal requirement to heat the house. And dirty pipes mean dirty homes, so occasional cleaning through the register openings assures clean air delivery and means less dusting for the housewife.

One of the accompanying pictures shows how efficiently Mr. Glaza goes after cleaning business, and here is what he says in a letter:

> "The Sturtevant Electric cleaner is a wonderful business getter. It is the handiest device that we have in our shop. I believe it is much more efficient than the straight suction type, as it loosens the dirt and draws it out at the same time. This is the argument I use in talking to a prospect.
>
> "When cleaning out the pipes, we disconnect them from the furnace bonnet, push the tube or hose, with a special loush attachment, back and forth, which loosens all the dirt. We also take off the registers, insert the hose and go through the same operation. One can readily see that our result is a good, thorough job of cleaning.
>
> "When we get a cleaning job we often find a defective casting, smoke pipe, grates. In many cases

we have been able to sell a new furnace."

Very truly yours,
L. E. GLAZA Co.,
L. E. Glaza.

Who Is L. E. Glaza?

One of the newspapers of Waterloo, Iowa, recently devoted a column to Mr. Glaza under the heading of "Who's Who in Waterloo," of which the following is the substance:

In 1914 L. E. Glaza started a furnace sheet metal business at the rear of his home in a small way. Good workmanship and energy created a demand for his services. The business grew until he was compelled to purchase a building for work and also a warehouse, located in another part of the city. Some 800 furnaces have been installed in Ames, Waterloo and vicinity during the past four years by his organization, and the Waterloo plant now requires a force of 18 men. In addition to furnaces and accessories, Mr. Glaza has gone in heavily for oil burning equipment.

A Mansfield, Ohio, Experience

Goettle Brothers of 248 North Mulberry Street, Mansfield, Ohio, in order to get business, show a pile of old furnaces which they had collected from homes where the owners had ordered new ones.

These orders were obtained very largely because the cleaner first had gained admittance for the salesman, who then had an opportunity to show the advantage of installing new equipment.

Newspaper Ads Bring Orders

One Toledo, Ohio, concern featured the furnace cleaning service in their local papers over a year ago. They received a large number of orders which were attended to by an efficient thoroughgoing man during dull months.

"As a result of this activity," that firm wrote, "only two of these jobs did not result in additional revenue. The other jobs needed repairs amounting to from $21.00 to $50.00 per furnace, and three new furnace sales were made to households where the cleaner was able to show that a new plant would be a money-saver and comfort bringer.

We expect to reproduce here in a week or so the advertisements of some furnace men run in the newspapers, which have been successful in bringing cleaning orders.

A Brockton, Massachusetts, dealer, Mr. Dunham, made a careful test on one furnace in a 6-room house to ascertain the amount of dirt which can be found. This furnace had been in use only for two seasons (one and one-half seasons with anthracite coal and one-half season with coke), so this was probably an unusually clean case. Yet he removed and measured sixteen quarts of dirt.

How to Secure Cleaner Orders

These dealers now find business coming to them through word of mouth advertising, but to start the ball rolling more active methods were used.

From the manufacturer of the furnace cleaner it is possible to secure electros for newspaper advertisements. A little envelope-sized booklet is also furnished which tells of the advantages of having furnaces "suction cleaned." These can be used as envelope stuffers or mailed to a list of householders with a letter.

Some firms find it advantageous to employ high school boys during the summer months to go out and solicit cleaning orders.

The Charges

Cleaning prices vary with the town, with the season and with the particular job. A man with a suction machine is said to be able to clean from five to eight furnaces a day and the prices charged for this work usually range at from $4 at the lowest during dull season to $8 at the highest during busy season. But the main purpose is not so much to gain immediate revenue as it is to gain entrance and to inspect the heating plant, with the probability of making repairs or installing a new job.

The Machine

The B. F. Sturtevant Company of Hyde Park, Boston, has been making industrial blower systems for years. The new super Vacuum Heater Cleaner is only about three years old, but has behind it many years of experience. It is a clean cleaner.

The equipment consists of a sort of horizontal metal barrel, into which is fitted a large cloth sack. This sack is ingeniously protected against injury from large or sharp pieces of dirt blowing against it. Tremendous suction is developed by a motor, which operates from any electric light switch. The machine weighs about 75 pounds.

Simply carry the machine into the basement, attach the nozzle, turn on the juice, and start to cleaning. Several different brushes and mouthpieces are furnished for various operations downstairs (including cleaning basement floor and tops of pipes), as well as for cleaning pipes upstairs.

When the job is finished, remove the sack and empty it—no dust, no dirt, no cinders, except where you want them.

One of the Errors in Price Shading

"The only thing I've got against the boss," said a young fellow, "is that he won't stand for shading a price to anybody. If he would give me a little leeway, I could pull off some sales that otherwise get away. Some man wants four or five spools of barbed wire and he tells me he can get it of a mail order house for twenty or thirty cents less than we ask. Can I meet that price and get the order? I cannot. I have to let him go and send off to Sears, Roebuck & Company or somebody else. Same way with a man buying a bike for his kid. I can't compete. I have to let 'em go."

A young hardware salesman with the wrong idea. He certainly ought to realize that you cannot charge one man one price and another man another price. He ought to know that plenty of customers will make fictitious quotations of lower prices if they think it will get them a reduction. And he ought to be learning how to meet price talk with quality talk, converting price buyers into quality buyers.

Chicago Hardware Folks Enjoy Pleasant Outing at Willow Springs

Dealers Trim Salesmen in "Big League" Ball Game!

Do you remember way back when you were a little youngster—the party was a big success if there was lots of food, ice cream, etc., and you went home laden with souvenirs.

After all, we haven't changed much, and it was a merry group of tired hardware picnickers who climbed into their cars Wednesday evening and wended their way home from the most successful hardware outing that any association has ever held. The Chicago Retail Hardware Association had added to their list of happy outings another real party, held at River Grove, Willow Springs, July 13th.

All the old-timers, plenty of new folks, were there, gathering in cars of every make and description, from the humble Ford laden with kiddies to the Buicks, Nashes and here and there a haughty Packard roadster.

Yes, Harvey Manny, Billy Waller, Charlie Glessner, Joe Goldberg were there—how could they stay away? Everybody knows a Chicago hardware picnic wouldn't be complete without them and the other Chicago hustlers who enjoy mingling socially with their good friends and customers.

The ball game between the dealers and the salesmen was a wonder —those boys sure can play ball. For once the umpire wasn't "fixed," and the dealers won, score being 12 to 9.

The kiddies' races were a lot of fun to the contestants as well as to the audience, but the race that was the fastest was that to the ice cream and crackerjack stand, where all entrants won.

The manufacturers, jobbers and trade papers were quite generous. So many gifts had been donated that every one went home with presents, not samples, but actual merchandise that helped make the day a wonderfully pleasant one laden with happy memories.

Special congratulations are due the officers and committees in charge.

1. Joe Goldberg, A. Robitcheck, Si Koehler, A. S. Halverson. 2. The Milcor Gang. W. H. Petersen, H. A. Parkin, E. G. oHlly, W. F. Waller and B. C. Jones. 3. Girls' Running Race. 4. Horse Shoe Pitching.

Officers of the Association

Wm. Triesselmann, president; E. G. Linquist, vice-president; Wm. F. Siewert, treasurer; John Wallace, financial secretary; S. J. Koehler, corresponding secretary.

Entertainment Committee

James Byrne, chairman; John Wallace, A. J. Rebman, Chas. Hoffmeister, P. Braun, Geo. Friedrich.

Dance Committee

Gus. Engelhardt, chairman; F. Zobac, Geo. Fager, Ed. White, H. W. Manny.

Races and Games

Wm. Siewert, chairman; J. Claridge, Fred Russel, Paul Hesse, G. H. Barth, Geo. Rapp, D. Zweifel, Oscar Fisher, H. E. Gnadt, Barney Gramm, Fred Kobick.

The Winning Argument: What Is It With You?

The best argument the salesman has in talking with a prospective purchaser is the quality argument. The customer would rather have better quality than to have lower price. There is more to be gained by convincing the customer of the superiority of the quality than by convincing him of the lowness of the price.

In the same way service may be made a winning factor to take the place of competitive price cuts. If some other store is quoted as selling cheaper, you can offset that lower price by selling better, by being a more accommodating salesman, by giving more little services and accommodations. In the face of price competition, put up your best argument in the form of quality and service defense.

Retail Hardware Doings

Arkansas

Ethel Griffin has purchased the interest of Ragon Bashom in the Ragon and Harwick Hardware Company, Clarksville.

Indiana

The Milton Soice Hardware Company, Plymouth, suffered a fire loss of $1,000.

The Works Hardware Store, Valparaiso, was damaged by fire.

Mrs. Daniels has purchased the hardware store of Mrs. Thella Zimmerman, Waweka.

Kansas

The new Wherritt-Montgomery Hardware store, Montezume, has opened for business.

G. F. Ensley has purchased the hardware business of W. H. Rosenbury at 121 East Park Street, Olathe.

Fourth Edition of Standard Code Contains Important Changes

New Heat Loss Factors Make for Greater Accuracy and Efficiency

THE Fourth Edition of the Standard Furnace Code is now ready for distribution from the office of Secretary Allan W. Williams of the National Warm Air Heating and Ventilating Association, 176 East Long Avenue, Columbus, Ohio.

It is very important that each warm air furnace installer interested in better warm air heating secure a copy of this fourth edition, because it contains numerous changes and important additions with which you will want to become familiar as quickly as possible.

For those who wish to check the fourth edition of the Code with the third edition, in order to note the exact changes, that edition is published in full hereinafter.

FOURTH EDITION

Standard Code Regulating the Installation of Gravity Warm Air Heating Systems in Residences

The Fourth Edition of the Standard Code supersedes all previous issues and contains corrections to date.

1st Edition issued Oct. 1, 1922
2nd Edition issued Feb. 1, 1923
3rd Edition issued June 1, 1924
4th Edition issued May 1, 1927

ARTICLE NO. 1

Meaning of the Term "Gravity Warm Air Furnace Heating System"

Gravity Warm Air Heating Systems, to which this code refers, shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto, consisting of warm air pipes and fittings, cold air or recirculating pipes, ducts, boxes and fittings, smoke pipes and fittings, registers, borders, faces and grilles, the same being intended for heating buildings in which they may be installed.

ARTICLE NO. 2

Provisions to Be Made in Buildings Under Construction for Reception of Gravity Warm Air Heating Systems

Section 1. (a) The following provisions shall be made by the owner or building contractor, in any building wherein a gravity warm air heating system is to be installed.

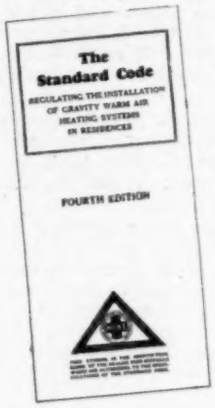
(b) Where warm air register boxes, heads, pipes or stacks are to be installed, joists shall be set not less than sixteen inches (16″) on centers and shall be butted and not lapped. Studding shall be set directly over and under joists, leaving a space of not less than fourteen inches (14″) between studs and joists. Wherever joists are cut, headers must be put in to support joists.

(c) All first story single or subfloors shall be continuous. In all houses having studded exterior walls, these floors shall be extended to the outside sheathing and all spaces between studding shall be closed at the attic line.

Note 1. It is strongly recommended that the attic be tightly floored or ceilings insulated to reduce heat losses.

(d) All partition walls (or sections of these walls) in which heat stacks to second or third floor rooms are to be installed, shall be of sufficient size to accommodate stacks required to heat said rooms.

You can obtain a complete copy of this 4th edition of the *Standard Code* in pamphlet form as shown by writing AMERICAN ARTISAN



It is FREE of course—a part of our service to help boost the *Standard Code*

Chimneys

Section 2. (a) The owner shall provide a chimney for the furnace constructed in a manner to comply with the following specifications.

(b) The chimney must be absolutely smoke tight throughout its entire length, and must extend at least three feet (3′) above a flat roof or two feet above the ridges of peak roofs.

(c) If built of a single thickness of brick or of cement blocks, it shall be lined throughout its entire length with fire clay flue lining, having not less than three-fourth inch (¾″) thickness. Flue lining to be laid in mortar and made air tight.

(d) The furnace flue must have no other opening for attaching any fire place, furnace, stove, range, water heater, gas or ventilating connection.

(e) If necessary to offset the flue, it must be done in such a manner as not to reduce the cross sectional area or create a ledge or obstruction, where loose material may lodge.

(f) Its narrowest internal dimension shall not be less than eight inches (8″) and no flue smaller than 8″x8″ rectangular or eight inch (8″) diameter round will be considered suitable when hard coal is to be burned, or 8″x 12″ rectangular or ten inch (10″) round for soft coal or wood.

(g) It is strongly recommended that nothing less than 8″x12″ internal dimensions be used in any case.

Note 2. It is recommended that the height above the furnace grate be not less than twenty-six feet (26′).

Note 3. It is strongly recommended that all new chimneys be built in strict accordance with the ordinance recommended by the National Board of Fire Underwriters.

ARTICLE NO. 3

Method for Determining Sizes of Warm Air Pipes, Wall Stacks and Furnaces for Use in Residences

Method for Determining Sizes of Basement Warm Air Pipes

Section 1. Each First Floor Room

Divide square feet of glass by 12,
Divide square feet of net outside wall by 60 (see Table A),
Divide cubic contents by 800.
Add together the above and multiply by 9.
The result is the area of the basement pipe.

{ The sum of: Glass (sq. ft.) (Note 4) ÷ 12; Net Wall (sq. ft.) (Note 5) ÷ 60; C'bic Contents ÷ 800 } ×9 = Area of Basem't Pipe

Section 2. Each Second Floor Room

Divide square feet of glass by 12,
Divide square feet of net outside wall by 60 (see Table A),
Divide cubic contents by 800,
Add together the above and multiply by 6,
The result is the area of the basement pipe (see Sec. 9, b).

{ The sum of: Glass (sq. ft.) (Note 4) ÷ 12; Net Wall (sq. ft.) (Note 5) ÷ 60; C'bic Contents ÷ 800 } ×6 = Area of Basem't Pipe

Section 3. Each Third Floor Room

Divide square feet of glass by 12,
Divide square feet of net outside wall by 60 (see Table A),
Divide cubic contents by 800,
Add together the above and multiply by 5.

The result is the area of the basement pipe.

The sum of: Glass (sq. ft.) (Note 4) ÷ 12 Net Wall (sq. ft.) (Note 5) ÷ 60 C'bic Contents ÷ 800	×5=Area of Basem't Pipe

Basis of Working Rules for Pipes

(a) These formulae are for 70 degrees temperature difference (outside temperature zero, inside temperature 70 degrees Fahrenheit). When temperature difference is more than 70 degrees, add 1½% per degree to final figures. When temperature difference is less than 70 degrees, deduct 1½% per degree from final figures.

(b) The values as given in Table A for use in the working rules, article 3, sections 1, 2 and 3, are derived as follows:

Example:

The factor 60 in Table A, Item No. 1, is based upon a co-efficient of heat transmission of 0.23 B. t. u. per square foot per degree difference per hours, thus:

W x 0.23 x 70 ÷ 111 = sq. in. 1st floor leader to compensate for the heat loss through walls only. In this, W = net area of exposed wall in sq. ft.; 0.23 = co-efficient of transmission in B. t. u. per sq. ft. per degree difference per hr.; 70 = difference in temperature of air on inside and outside of wall; 111 = heat delivering capacity of one sq. in. of first floor leader pipe for a register temperature of 175° F. Reduced to its simplest approximate form, this is W x 9

60

Likewise, substitute 167 for second floor and 200 for third floor in place of 111.

The values in Table A for the different types of walls were obtained by substitution of proper co-efficient of heat transmission instead of 0.23 in the above formula.

Table A

(The factor 60 used in Art. 3, Secs. 1, 2 and 3, is for buildings constructed as in Item No. 1. When other types of walls are used, substitute the appropriate factor as given below):

No. 1.	Frame wall constructed of siding, paper, sheathing, studding, lath and plaster	60
No. 2.	Frame wall constructed of siding or stucco direct to sheathing (no paper), lath and plaster	52
No. 3.	9″ Brick Wall (no plaster)	40
No. 4.	9″ Brick Wall, plastered on one side	48
No. 5.	9″ Brick Wall, air space, furred and plastered	65
No. 6.	13″ Brick Wall, no plaster	53
No. 7.	13″ Brick Wall, plastered one side	57
No. 8.	13″ Brick Wall, air space, furred and plastered	75
No. 9.	4″ Brick, 4″ hollow tile, plastered	55
No. 10.	4″ Brick, paper, sheathing, studding, lath and plaster (brick veneer)	68
No. 11.	8″ Hollow tile stucco and plaster	67
No. 12.	8″ Hollow tile, stucco, furred and plastered	90

Roofs

No. 13.	1″ T. & G. Sheeting, Tar and Gravel	48
No. 14.	1″ T. & G. Sheeting and Composition roof	40
No. 15.	1″ T. & G. Sheeting and Tin	24
No. 16.	Corrugated Iron on strips.	9.3

Ceilings

No. 17.	Lath and plaster without floor above	50
No. 18.	Lath and plaster with tight floor above	90
No. 19.	Metal without floor above.	40
No. 20.	Metal with tight floor above	70

Method for Determining Size of Wall Stacks

Section 4. First Floor Rooms.
Same as Section 1.

Section 5. Second Floor Rooms.
Not less than 70% of basement pipe area as determined in Section 2.

Where one stack is used to convey heat to two rooms, its net area shall be determined by adding together the areas of the two single stacks, which would be required to take care of the heat losses for each room were single stacks used.

Section 6. Third Floor Rooms.
Not less than 70% of basement pipe area as determined in Section 3.

Explanatory Notes

Note 4. In obtaining glass surface, use full casement opening. An outside door is figured as glass.

Note 5. To obtain net outside wall, multiply height by width, and deduct the glass in all windows and outside doors. For all rooms with attic spaces immediately above, full ceiling areas shall be taken into account, using Table A.

Note 6. For rooms having unusual exposure, ordinarily north, northeast and northwest, add 15% to pipe area. For east and west exposure, add 10%.

Note 7. Use no warm air pipe less than 8 inches in diameter. If a basement warm air pipe figures greater area than any standard commercial size, then the nearest commercial size shall be used, provided, however, that the total pipe area shall in no case be less than the total requirements, according to Secs. 1, 2 and 3.

Note 8. It is understood in using the above values for determining basement warm air pipe areas, that these pipes should be run comparatively straight and that they should not be over 10 to 12 feet in length. Sharp turns and long pipes should have extra capacity.

Note 9. The value of 800 (used in cubic contents) is for an estimated air change of one room volume per hour. If it is desired to provide for 1½ room volume, use the figure 600. If for 2 room volume, use the figure 400.

Transition Fittings and Stacks

Section 7. (a) Transition from warm air pipes to stacks shall be made with a well designed elbow or boot and no stack shall be less than 70% of the area of the warm air pipe leading to it.

(b) All first floor fittings and connections shall maintain a free area equal to the round basement pipes leading to them.

Method for Determining Size of Registers

Section 8. All registers shall have a free area at least equal to the area of the basement pipes leading to them.

Method for Determining Size of Furnace

Section 9. (a) Add together the areas (expressed in square inches) necessary for heating the building, as determined by the foregoing calculated requirements, Art. 3, Secs. 1, 2 and 3, and install a furnace, rated by the following formula:

Furnace Rating Formula

$$L = 1.75\ G\ [1 + 0.02\ (R - 20)]$$

L = square inches of warm air pipe connected to the furnace as calculated.

G = grate area in square inches; the area of the fire pot at the grate level; its most restricted area.

R = ratio of heating surface area to grate area; 1.75 = a constant, based upon the results obtained in the Association Research on a furnace having 20 square feet of heating surface for each square foot of grate, and including factors for:

E = efficiency of heater;
C = combustion rate;
F = calorific value of fuel;
0.75 = percentage of heat available at registers;
136 = B. t. u. delivering value of one square inch of pipe, assuming half of the heat is sent to each floor. This value is based on an operating temperature of 175° F. at the register.

The formula allows 1.75 square inches of warm air pipe area for each square inch of grate area, for the furnace having a ratio of heating surface to grate surface of 20 to 1. For furnaces having other ratios of heating surfaces to grate surface, it adds 2 per cent or deducts 2 per cent of each unit above or below a ratio of 20.

Application:

	No. 1 Positive Correction	No. 2 No Correction	No. 3 Negative Correction
Grate area, sq. in. =	346	346	346
Heating surface area, sq. in. =	7540	6920	5665
Ratio heating surface area to grate area =	21.8 to 1	20.0 to 1	16.4 to 1
R—20 =	1.8	0.0	—3.6
Correction, per cent =	3.6	0.0	—7.2
1.75 G =	606	606	606
L = 1.75 G + correction =	628	606	562

Certified Measurements

Certified measurements on warm air furnaces, together with the name and number of that furnace, will be issued by authority of the National Warm Air Heating and Ventilating Association, when, if and as, the grate areas and heating surfaces have been accurately measured and approved by the Research Advisory Committee.

(b) In second floor duplex, flats or apartments where separate heating plants are used, add 50% to the total net calculated areas as determined in Art. 3, Sec. 5. This represents the required warm air pipe capacity in square inches of the furnace for the second floor.

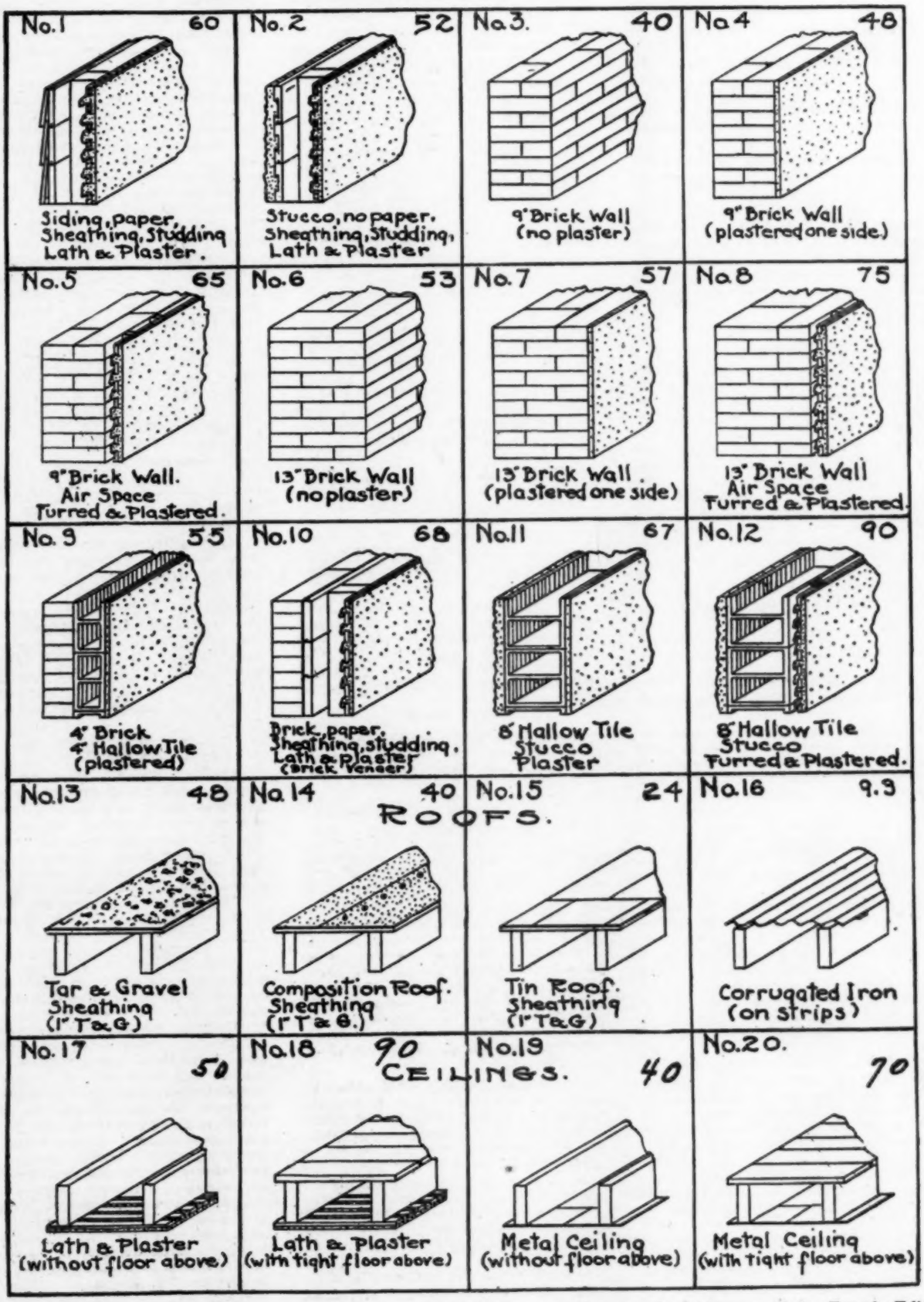
ARTICLE NO. 4

Installation

Location of Furnace

Section 1. The location of the furnace shall equalize the length of warm

TABLE A. EXPOSED WALLS, ROOFS AND CEILINGS


No.1 60
Siding, paper, Sheathing, Studding Lath & Plaster.
No.2 52
Stucco, no paper. Sheathing, Studding, Lath & Plaster
No.3. 40
9" Brick Wall (no plaster)
No.4 48
9" Brick Wall (plastered one side)
No.5 65
9" Brick Wall. Air Space Furred & Plastered.
No.6 53
13" Brick Wall (no plaster)
No.7 57
13" Brick Wall (plastered one side)
No.8 75
13" Brick Wall Air Space Furred & Plastered.
No.9 55
4" Brick 4" Hallow Tile (plastered)
No.10 68
Brick, paper, Sheathing, studding, Lath & Plaster (brick veneer)
No.11 67
8" Hallow Tile Stucco Plaster
No.12 90
8" Hallow Tile Stucco Furred & Plastered.
No.13 48
Tar & Gravel Sheathing (1" T&G)
No.14 40
ROOFS.
Composition Roof. Sheathing (1" T & G.)
No.15 24
Tin Roof. Sheathing (1" T&G)
No.16 9.3
Corrugated Iron (on strips)
No.17 50
Lath & Plaster (without floor above)
No.18 90
CEILINGS.
Lath & Plaster (with tight floor above)
No.19 40
Metal Ceiling (without floor above)
No.20. 70
Metal Ceiling (with tight floor above)

Graphically Illustrating the Contents of the Newly Inserted Table A in the Standard Furnace Code, Fourth Edition.

air runs as far as possible, yet give necessary preference to pipes supplying living rooms, dining rooms and main halls.

Foundation

Section 2. Furnace foundation of brick, cement, or other incombustible material must be provided. Said foundation to extend at least fifteen inches (15″) at rear and sides of furnace casing and at least thirty-six inches (36″) in front of furnace casing. Foundation to be level.

Setting or Assembling of Furnace

Section 3. (a) The base ring of the furnace shall be cemented to the foundation, making an air-tight joint. The furnace parts shall be assembled plumb and level, and in a workmanlike manner.

(b) All sections and joints shall be properly fitted. Joints requiring cement shall be well filled and all bolts shall be drawn up tightly.

Casings

Section 4. (a) Warm air furnaces shall be enclosed in metal casings or walls of brick, tile or concrete.

(b) Portable. Sheet metal casings, including casing tops, shall be made of galvanized sheets, not lighter than 26-U. S. Standard Gauge. They shall fit the castings and casing rings closely, so as to be dust-tight, and shall be securely fastened to the front. The casing shall be lined from the upper casing ring down to a line on a level with the grate.

(c) When side collars are used, the casing top must be of sufficient height so that the largest warm air pipe can be taken from side without ovaling. In no case shall a distance less than eight inches (8″) be maintained between the top of any furnace and the top line of the bonnet.

(d) Any furnace, the casing top of which shall come within twelve inches (12″) of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than eighteen inches (18″) beyond the casing of said furnace. This shield shall be suspended at least two inches below woodwork, allowing free air space between shield and woodwork. No furnace casing or top, coming nearer than six inches (6″) of ceiling or joists, shall be allowed in any case.

(e) Openings for side casing collars shall be cut into the casing top, so that the tops of all openings are on a level. Casing collars shall be fitted into place with a proper flange or bead on the outside and drawn up on the inside, making a dust-tight joint. All collars shall be of same size as the warm air pipes to which they are to be connected.

(f) Brick, cement or hollow tile casings shall be constructed as follows: Walls shall be not less than eight inches (8″) in thickness, and shall be constructed air-tight. The least inside dimension of rectangular casings shall be the same as that of the portable casing of a corresponding size of furnace. Walls shall be carried to the same height as the portable walls, allowing not less than eight inches (8″) between the top of the furnace and the bottom of the top cover. After placing the collars for the warm air pipes, continue the masonry up 2″ above the top of the collars, lay single or tee irons across the furnace top, spaced 8″, cover these with sheet metal not less than 26 U. S. S. gauge, cover the sheet metal with masonry or sand and run the side walls four inches (4″) above the roof of the furnace. A galvanized iron casing bonnet may be used on a brick set furnace.

Provision shall be made in the walls for a manhole to give ingress to heater.

Warm Air Pipes in Basement

Section 5. (a) All warm air pipes shall be made of bright tin not lighter than IC, or galvanized iron. Side seams shall be locked seams. All joints shall be either double seamed or lapped not less than one and one-quarter inches (1¼″) and such joints shall be match-beaded, or beaded and soldered, or riveted. All pipes and fittings shall be properly secured to ceiling or joist. No solder or riveted joint is required where round pipe slips over the casing collar or enters boot or box. Any pipe twelve inches (12″) or greater in diameter shall not be made of material lighter than IX tin or No. 26 U. S. Standard Gauge galvanized iron.

Note 10. It is recommended that all warm air pipes in the basement shall have an upward pitch of not less than one inch (1″) per running foot.

(b) No warm air pipe shall run within one inch (1″) of any woodwork unless such woodwork is covered with asbestos paper and the paper covered with tin or iron.

(c) All warm air pipes in the basement shall be provided with dampers supported on both sides not more than two feet from the casing.

(d) Where warm air pipes pass through a masonry wall, a metal thimble shall be provided, having a diameter at least 1″ greater than the pipe, and pipe supported in such a manner that the air space is uniform on all sides.

Wall Stacks

Section 6. (a) Single Stacks. All single wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin or galvanized iron and shall be covered with not less than one thickness of 12 lbs. per one hundred (100) square feet of asbestos paper. All studding and other woodwork facing said pipe shall be lined with metal and metal lath used in place of wood lath. An air space of not less than five-sixteenths (5/16) of an inch shall be allowed on the two sides nearest the vertical studs. All such pipes shall be braced in a proper manner so as not to obstruct the flow of air but to retain the full capacity throughout. All joints shall be locked and held in place by means of lugs or straps. No joint shall depend wholly upon solder to make it tight.

(b) Double Stacks. All double wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin, not lighter than IC or galvanized iron and shall be made double, from and including the boot or foot piece in basement to the top of each and every stack and register head on all floors. There shall be continuous uniform air space of not less than five-sixteenths (5/16) of an inch, which must be maintained between the outer and inner walls of all such pipes and fittings of all kinds, styles and descriptions; such pipes, heads, boots and other fittings to be of the styles, or equal to those accepted by the National Board of Fire Underwriters.

All stacks and fittings, either single or double, must be secured firmly in place by lugs or straps attached to the outer walls of stacks and fittings, and no nails shall be driven through these stacks or fittings at any point. No lugs or straps shall be formed by cutting holes in outer walls of stacks or fittings. No wall pipes or fittings shall be used which depend wholly on soldered joints. The various members shall be so made that all joints are locked or soldered and the several members shall be attached to each other with slip joints, which are, for the purpose intended, air-tight.

Registers

Section 7. (a) When baseboard or wall registers are used, they shall be properly and permanently attached to the stack head in such a manner that will prevent any leakage of air between the head and the register.

(b) Floor registers shall be provided either with register borders or double register boxes of tin or galvanized iron with an air space of not less than five-sixteenths (5/16) of an inch between inner and outer boxes.

(c) Registers for warm air and warm air pipes shall not be located in outside walls. The warm air registers in the various rooms shall be located in or near the inside walls in all cases.

(d) Any furnace system having not more than two warm air registers, at least one of the registers shall be without valve or louvers and the pipe thereto shall be without damper.

Air Supply to Furnace

Section 8. (a) The air supply to furnace for warm air heating plants may be taken from outside or from within the building or may be taken partially from outside and partially from within. In no case, however, shall air be supplied to any furnace from any basement or furnace room.

(b) The cold air intake or return where air is taken from within the building shall have a net area throughout its entire length of not less than the combined net area of all warm air pipes leading from the furnace. This may be maintained in one or more ducts. No reverse incline or air trap will be allowed in any section thereof.

(c) When the cold air supply is taken wholly from the outside of the building the supply duct at its most contracted area must equal or exceed eighty per cent (80%) of the combined area of all warm air pipes leading from the furnace.

(d) Cold air ducts shall be constructed of metal, tile or other incombustible material having smooth inner surface and shall maintain a constant net area throughout their entire length and shall be made dust-tight. Horizontal return ducts shall have at least 10% greater area than vertical connecting pipes. Where a boot or shoe is connected to the casing at the base, the opening shall not extend higher than a line on the level of the grate of the furnace. The width of the shoe shall be of proper measurement to make the area at least equal to that of the round or square pipe to which it is connected.

(e) Wherever the space between joists is used to convey cold air overhead, the joists and all wooden surfaces between such joists shall be lined

with metal and a sheet metal pan constructed to extend not less than two inches (2″) below said joists. The connection from this pan to the boot or shoe shall be made of galvanized iron not lighter than No. 26 U. S. Standard Gauge, and shall have a transition collar, the top area of which shall be at least 10% greater than the area of the connecting pipe.

(f) When it is necessary to set the furnace over a pit and connect up cold air under the basement floor, such pit or cold air trench shall not exceed eighteen inches (18″) in depth below the casing ring and the width of the trench or trenches shall be of proper measurement to make the area at least equal to the pipe to which it is connected. The connection between the cold air pipe or duct and the underground pit shall be made with converse transition joint as described in Article IV, Section 8, (b) and (d).

(g) The cold air face or faces shall be made of wood, or metal. When set in floors, the top of same shall be flush with floor. Where cold air face is placed in a seat or side wall (whether furnished by owner, general contractor or furnace contractor), the open work of face must extend to within at least one inch (1″) of the floor line.

The free area of cold air faces shall be at least equal to the free area of the duct or ducts to which they are connected.

Note 11. The effective area of a vertical cold air face lies within fourteen inches (14″) of the floor line, hence, the capacity of any vertical cold air face shall be determined by multiplying the base line in inches by not to exceed fourteen inches (14″) in height and deducting for the grills or cross bars.

Smoke Pipes.

Section 9. (a) The smoke pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of metal not lighter than No. 24 U. S. Standard Gauge, and not less than the full size of the collar on the furnace throughout its entire length. It must have no opening for attaching any fire place, stove, range, water heater, gas or ventilating connection. It shall be lock-seamed or riveted; all joints shall lap not less than one and one-half inches (1½″) and it shall be rigidly secured. Cast iron smoke pipe may be used.

(b) All smoke pipes shall be provided with check dampers, placed on the side of the pipe or at the end of a tee; when cast iron smoke pipe dampers are used, they must be placed between the check damper and the furnace and supported on both sides of the pipe.

(c) Where the smoke pipe enters the flue, a thimble shall be cemented into the flue and the connections thereto made air-tight. Should any smoke pipe come within eighteen inches (18″) of any combustible material, such combustible material must be covered with asbestos paper and a metal shield, so fastened that a two-inch air space exists between this shield and the combustible material. This shield shall be no less in size than twice the diameter of the smoke pipe and of sufficient length to cover the combustible material at all points.

(d) No smoke pipe shall project through any external wall or window. No furnace connection is to be made to a flue without a cast iron or steel cleanout having first been provided in the flue (not more than eight inches (8″) below the smoke pipe opening). The base of the flue shall be filled up to the bottom of the cleanout: all of which must be made air-tight.

Pipeless or One Pipe Furnaces

Section 10. (a) When but one duplex grating is used for both warm air and cold air in a so-called pipeless furnace, the area of the cold air intake shall be at least equal to the area of the warm air outlet of the grating. Art. 4, Sec. 4, relative to casing, shall not govern when this type of furnace is installed, but the following specification shall be followed: The inner and outer casing of this type of furnace may be made of either black or galvanized iron not lighter than No. 26 U. S. Standard Gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the heater be allowed closer than twelve inches (12″) to any ceiling or joists above the furnace.

(b) Where joists are cut to accommodate this furnace, headers shall be put in and braced.

(c) Article No. 3 for determining area of warm air pipe shall not govern in figuring a pipeless furnace.

(d) Where one warm air register face is used and separate face or faces for cold air supply are used, then Article No. 4, Sections 5, 7 and 8, shall apply.

Sam J. Sorensen Shows T. E. Redman How He Makes Tin Gutter Joints Hold. How Do You Do It?

In the July 2nd issue of AMERICAN ARTISAN we published the following item from T. E. Redman of Groveport, Ohio.

TO AMERICAN ARTISAN:

In using tin for gutter tin the 28-inch or the 20-inch way, the joints, after being well soldered, burst in a few years. We say this bursting is caused by expansion and contraction. What method is now used to allow for expansion and contraction? Twenty years ago we soldered some of our gutters on both sides and the results have proved to be good, but they could be better.

T. E. REDMAN.

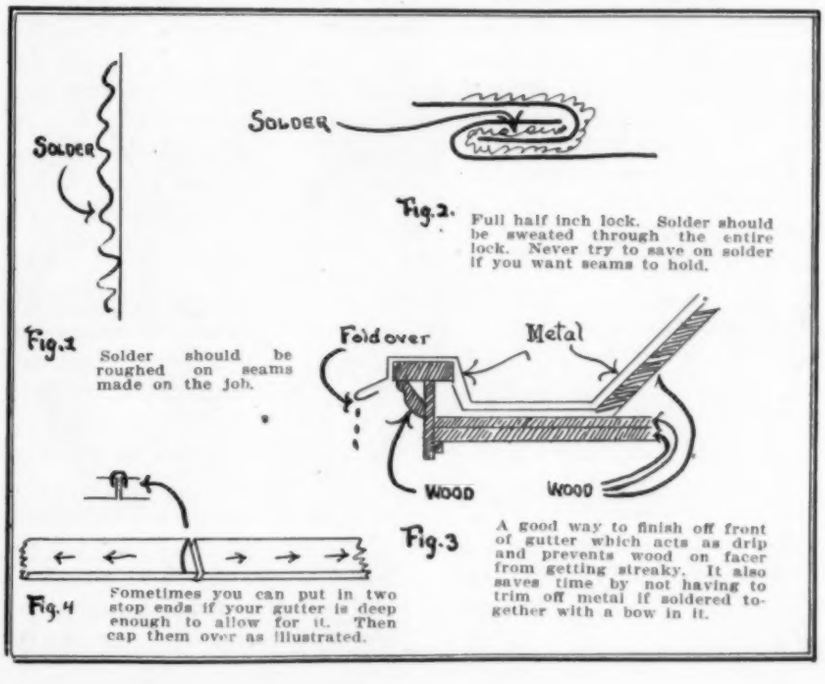
Groveport, Ohio.

Sam J. Sorensen of Chicago sends the following answer and sketches.

AMERICAN ARTISAN:

In my experience handling lead plate I found out it pays to work the best lead plate you can get. Forty-pound coating with a soft base is the best. I had trouble with my seams also until one day I was forming up a 3-inch tube of lead plate and as I would roll it up it would spring right out like spring steel, so when we changed brand of lead plate with a soft base we had no more trouble. I am sure, Mr. Redman, if you will use plenty of a good 50-50 grade of solder and good 40-pound soft lead plate you will have no more trouble.

How do you make the seams hold? If you have found a method that gives better satisfaction than any others you have used, send it in with some rough sketches.


SOLDER
SOLDER
Fig.2.
Full half inch lock. Solder should be sweated through the entire lock. Never try to save on solder if you want seams to hold.
Fig.1
Solder should be roughed on seams made on the job.
Fold over
Metal
WOOD
WOOD
Fig.3
A good way to finish off front of gutter which acts as drip and prevents wood on facer from getting streaky. It also saves time by not having to trim off metal if soldered together with a bow in it.
Fig.4
Sometimes you can put in two stop ends if your gutter is deep enough to allow for it. Then cap them over as illustrated.

Iron and Steel Markets Have Recovered Favorably from Early June Slump—Industry Expected to Regain Customary Fall Stride Soon

Pig Iron Sales Are Fair---Copper and Zinc Prices Stronger---Tin and Lead Drop

IRON and steel markets have rebounded encouragingly from the interruptions early in the month and for some factors bookings in the first half of July will exceed those of the first half of June.

Production and consumption are scraping the bottom of the summer low, it is generally believed, but a month may elapse before the industry hits its accustomed fall stride.

Pig iron is more active in the important markets but prices continue weak. Quotations on steel, while still subject to pressure, are holding. Demand for plates, shapes and bars is not so active as that for sheets, strip and other light products.

The building outlook as reflected instructural steel and reinforcing bar business has taken on a brighter hue for the fall.

Steel ingot output is more likely to register a gentle decline, due chiefly to further curtailment at Chicago, but June undoubtedly saw the great bulk of capacity in excess of active requirements dropped.

Pig Iron

At Pittsburgh inquiries for small tonnages of pig iron are attracting more than ordinary attention because of the general lack of business. One inquiry calls for 500 to 2,500 tons of gray forge iron of certain analysis.

One Pennsylvania steelworks sold a fair tonnage of No. 2 foundry to a consumer near its plant at $18.50, furnace. Valley stacks are selling only single car lots or small quantities at $18, base, valley, but $17.50, which applied on the last large tonnage sales of No. 2 foundry and malleable still is indicated as available.

Bessemer and basic are selling in only small quantities at $18.50 and $17.50, valley, respectively. A tonnage of low phosphorus iron is understood to have been closed by a builder of rolling mill machinery at $24, eastern furnace. Valley stacks continue to quote $27.50, valley, on low phosphorous iron.

Sales in Chicago territory and to the north are at $20, Chicago furnace, for No. 2 foundry and malleable. The sale of 500 tons of foundry to a Milwaukee melter was at that price.

One important merchant blast furnace interest which refrained at the beginning of the month from opening its books formally for third quarter delivery, although another leading merchant interest has done so at $18, Birmingham, now is offering Southern grades at $17.25, Birmingham. This is for the foundry grades which it produces, and presumably also for basic.

Copper

Copper sold at 12.50 cents in good quantity about a week ago and producers quickly became unwilling to sell more at this bottom figure. At the higher price of 12.62½ cents, Connecticut, users were unwilling to meet producers, so the market deadlocked.

Zinc

Prime Western zinc moved up slightly to 6.20 cents, more on account of a strong ore market than on account of buying. With ore at $42 a ton, the margin on metal is only $20, an unusually low level, yet slightly more than a week ago.

June statistics on zinc did not indicate much change in the situation, with the figures remaining unfavorable to producers.

Domestic shipments were 43,122 tons, the smallest in two years, while exports held well at 4,784.

Tin

Prices on tin have fallen nearly three cents so far this month on spot and more than one cent on futures.

Some interest is shown in futures and users appear to be buying ahead a little more than in the past year or two. As a result the premium on spot and nearby is smaller. The recent size of the premium probably was one cause of the change and another probably was that low prices were considered attractive. The market appears to be in buyers' hands more than in a long time.

Lead

The lead market went down 10 points. Buying in this country the past few weeks has given fair account of itself and the cause of weakness has been weakness abroad with the possibility of additional supplies.

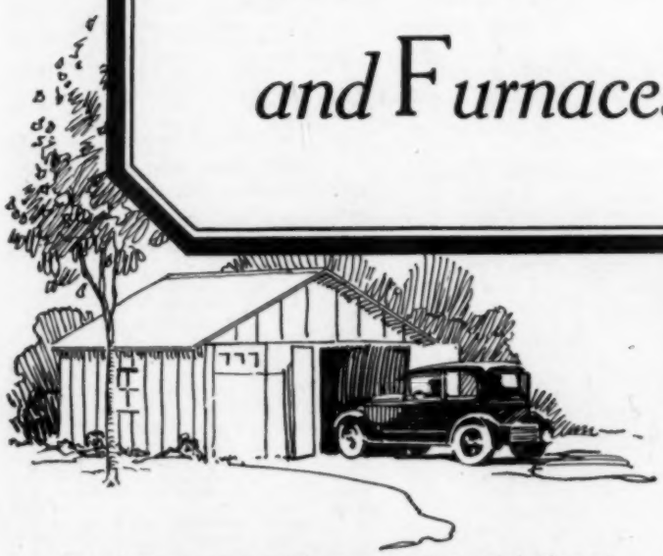
Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, $39.25; commercial 45-55, $36.25; plumbers', $33.25; all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $16.50 to $17.00; old iron axles, $16.50 to $20.50; steel springs, $14.25 to $14.75; No. 1 wrought iron, $11.00 to $11.50; No. 1 cast, $13.50 to $14.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc 3½ cents; cast aluminum, 13¾ cents.

When Stove Heat Was the Rule, and Furnaces Were Few—



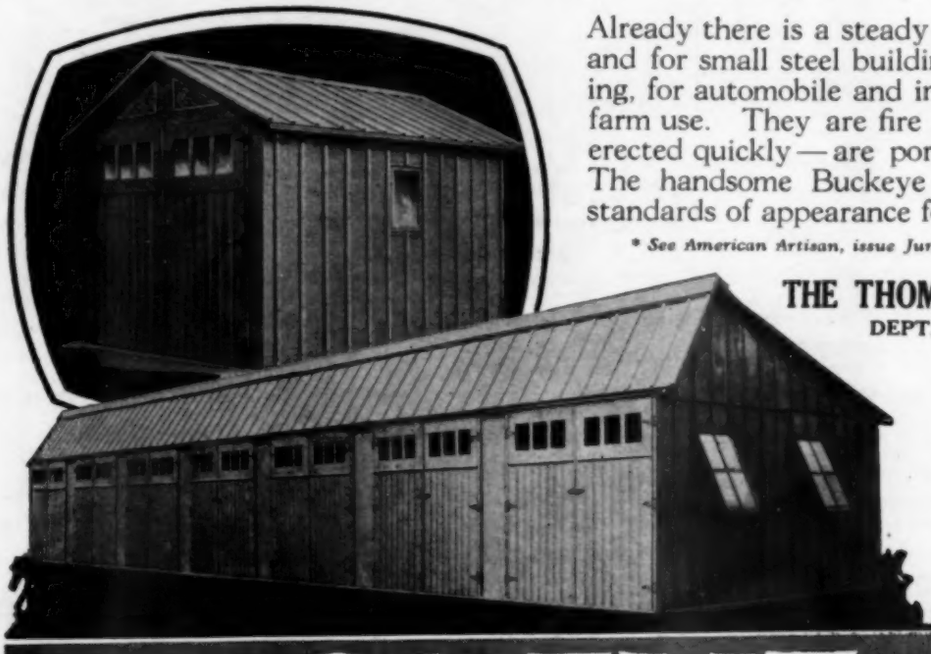
Not a flimsy make-shift, but a substantial all-steel building—handsome without cheap ornamentation.

FEW people expected then, that furnace selling would ever become a profitable business for the sheet metal man. But "tinners" with vision saw the possibilities, and have profited by the universal popularity of the furnace.

Again fortune is playing into the hands of progressive sheet metal men. In the near future sheet steel buildings will be as common as furnaces.*

Already there is a steady demand for steel garages, and for small steel buildings for light manufacturing, for automobile and implement storage, and for farm use. They are fire and storm proof—can be erected quickly—are portable—and good looking. The handsome Buckeye garages are setting new standards of appearance for metal buildings.

* *See American Artisan, issue June 11, 1927, page 78.*



THE THOMAS & ARMSTRONG CO.
DEPT. A.A. LONDON, OHIO

You can begin selling Buckeye garages at a liberal profit *now*,—there is a ready market. And you don't have to invest a cent. You sell from photographs, blueprints, and samples of the material. We ship on your order.

BUCKEYE STEEL GARAGES

THE THOMAS & ARMSTRONG CO., DEPT. A. A., LONDON, OHIO.

Please send me a description of Buckeye steel garages and buildings, and quote prices and terms to agents.

NAME ..... **ADDRESS** .....

Say you saw it in AMERICAN ARTISAN—Thank you!

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON

Chicago Fdy., No. 2	$20 00
Southern Fdy. No. 2	23 26
Lake Superior Charcoal	27 04
Malleable	20 00

FIRST QUALITY BRIGHT TIN PLATES

IC	20x28 112 sheets	$25 10
IX	20x28	29 60
IXX	20x28 56 sheets	16 20
IXXX	20x28	17 55
IXXXX	20x28	18 95

TERNE PLATES

			Per Box
IC	20x28,	40-lb. 112 sheets	$26 00
IX	20x28,	40-lb. 112 sheets	28 50
IC	20x28,	25-lb. 112 sheets	21 75
IX	20x28,	25-lb. 112 sheets	24 25
IC	20x28,	20-lb. 112 sheets	20 00
IV	20x28,	20-lb. 112 sheets	22 50
IC	20x28,	15-lb. 112 sheets	18 50

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including ¼ in.—100 lbs. $4 55

COKE PLATES

Cokes, 80 lbs., base, 20x28	$13 60
Cokes, 90 lbs., base, 20x28	13 80
Cokes, 100 lbs., base, 20x28	14 00
Cokes, 107 lbs., base, IC 20x28	14 30
Cokes, 135 lbs., base IX 20x28	16 40
Cokes, 155 lbs., base, 56 sheets	9 20
Cokes 175 lbs., base, 56 sheets	10 05
Cokes, 195 lbs., base, 56 sheets	10 90

BLUE ANNEALED SHEETS

Base 10 ga. per 100 lbs.	$3 50
"Armco" 10 ga. per 100 lbs.	4 00

ONE PASS COLD ROLLED BLACK

No. 18-20 per 100 lbs.	$3 75
No. 22 per 100 lbs.	3 90
No. 24 per 100 lbs.	3 95
No. 26 per 100 lbs.	4 05
No. 27 per 100 lbs.	4 10
No. 28 per 100 lbs.	4 20
No. 29 per 100 lbs.	4 35
No. 30 per 100 lbs.	4 45

"ARMCO" GALVANIZED

"Armco" 24 per 100 lbs. $6 15

GALVANIZED

No. 16 per 100 lbs.	$4 30
No. 18 per 100 lbs.	4 45
No. 20 per 100 lbs.	4 60
No. 22 per 100 lbs.	4 65
No. 24 per 100 lbs.	4 80
No. 26 per 100 lbs.	5 05
No. 27 per 100 lbs.	5 15
No. 28 per 100 lbs.	5 30
No. 30 per 100 lbs.	5 70

BAR SOLDER

Warranted

50-50 per 100 lbs. $29 25

Commercial

45-55 per 100 lbs.	36 25
Plumbers per 100 lbs.	33 25

ZINC

In Slabs $8 50

SHEET ZINC

Cash Lots (600 lbs.)	$11 75
Sheet Lots	12 75

BRASS

Sheets, Chicago base	17½c
Mill Base	17¾c
Tubing, brazed base	26½c
Wire, base	18c
Rods, base	15¼c

COPPER

Sheets, Chicago base	21¼c
Mill Base	20¼c
Tubing, seamless base	24¼c
Wire, No. 9, B & S Ga.	17⅞c
Wire, No. 10, B & S Ga.	17½c
Wire, No. 11, B & S Ga.	18¼c
Wire, No. 8, B & S Ga. and heavier	17c

LEAD

American Pig	$6 95
Bar	7 95

TIN

Pig Tin	per 100 lbs.	$71 00
Bar Tin	per 100 lbs.	72 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	6¼c per lb.
Mill board 3/32 to ⅛	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6 00 per roll

BRUSHES

Hot Air Pipe Cleaning

Bristle, with handle, each $0 85

Flue Cleaning

Steel only, each 1 25

BURRS

Copper Burrs only 40-5%

CEMENT, FURNACE

American Seal, 5-lb. cans, net	$ 40
American Seal, 10-lb. cans, net	80
American Seal, 25-lb. cans, net	2 00
Pecora per 100 lbs.	7 51

CHIMNEY TOPS

Adams' Revolving

	Wt. Doz.	Prize Doz.
4 in.	21 lbs.	$11 00
6 in.	24 lbs.	11 50
7 in.	30 lbs.	13 50
8 in.	33 lbs.	15 00
9 in.	51 lbs.	16 50
10 in.	56 lbs.	18 00
12 in.	66 lbs.	22 00
14 in.	110 lbs.	36 00

CLINKER TONGS

Front Rank, each	$0 75
Per doz.	8 40

CLIPS

Damper

Acme, with all tail pieces, per doz.	$1 25
Non Rivet tail pieces, per doz.	25

COPPERS—Soldering

Pointed Roofing

3 lb. and heavier	per lb. 40c
2½ lb.	per lb. 45c
2 lb.	per lb. 48c
1½ lb.	per lb. 55c
1 lb.	per lb. 60c

CORNICE BRAKES

Chicago Steel Bending

Nos. 1 to 6B Net

CUT-OFFS

Gal., plain, round or cor. rd.

26 gauge	30%
28 gauge	35%

DAMPERS

"Yankee" Hot Air

7 inch, each 20c, doz.	$1 75
8 inch, each 25c, doz.	2 40
9 inch, each, 30c, doz.	2 75
10 inch, each 32c, doz.	3 00

Smoke Pipe

7 inch, each	$0 35
8 inch, each	40
9 inch, each	50
10 inch, each	60
12 inch, each	90

Reversible Check

8 inch, each	$ 56
9 inch, each	70

Diamond Smoke Pipe

7 inch, doz.	$ 5 00
8 inch, doz.	8 00
9 inch, doz.	12 00
10 inch, doz.	15 00

Adams' Sheet Metal

7 inch, doz.	$ 1 60
8 inch, doz.	2 20
9 inch, doz.	2 60
10 inch, doz.	2 80

DIGGERS

Post Hole

Iwan's Split Handle (Eureka)

4-ft. Handle...per doz.	$14 00
7-ft. Handle...per doz.	36 00

Iwan's Hercules pattern, per doz. 14 90

EAVES TROUGH

Galv. Crimpedge, crated 75 & 5%	
Zinc, "Barnes"	60%

ELBOWS

Conductor Pipe

Galv., plain or corrugated, round flat Crimp.

28 Gauge	60%
26 Gauge	45%
24 Gauge	

Galv. & Terne Steel

Plain Rd. and Rd. Corr.:

28 Ga.	60%
26 Ga.	45%
24 Ga.	15%

Square Corrugated

No. 28 Gauge	50%
26 Gauge	35%

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.

Not nested	70 & 5%
Nested solid	70 & 5%

Sq. Corr., A. & B. & Octagon:

28 Ga.	50%
26 Ga.	35%

Portico

1", 1¼", 1½" 45%

Copper

16 oz., all designs 45%

Zinc—

All styles 60%

ELBOWS—Stove Pipe

1-piece Corrugated. Uniform Blue "Milcor" No. 28 Gauge.	Doz.
5-inch	$1 25
6-inch	1 35
7-inch	1 75

Special Corrugated

6-inch	$1 00
7-inch	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge. Uniform Blue.	
5-inch	$1 75
6-inch	1 85
7-inch	2 15

WOOD FACES—50% off list.

FENCE

726-6-12½%	(100 rods) $328 68
1948-6-14½%	(100 rods) 43 62

FILES AND RASPS

Heller's (American)	50-10%
American	60-10%
Arcade	50%
Black Diamond	50%
Eagle	50%
Great Western	50%
Kearney & Foot	50%
McClellan	50%
Nicholson	50%
Simonds	60%

FIRE POTS

Clayton & Lambert's

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%

West of above boundary 49%

Geo. W. Diener Mfg. Co.

	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene, or Gasolene Torch, 1 qt.	7 50
No. 10 Tinner's Furn. Square tank, 1 gal.	12 60
No. 15 Tinner's Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.

Gasolene, Nos. 25 and 36 60%

Quick Meal Stove Co.

Vesuvius, F. O. B. St. Louis 30%

(Extra Disct. for large quantities)

GALVANIZED WARE

Pails (Galv. after made), 10-qt.	$2 12
Tubs (Galv. after made).	
No. 1	6 00
No. 2	6 85

GLASS

Single Strength, A, 25-in. brackets	87%
Single Strength, A, 34 to 40-in. bracket	56%
Single Strength, A, all other brackets	86%
Double Strength, A, all sizes	86%

HANGERS

Conductor Pipe

Milcor Perfection Wire 25%

Eaves Trough

Milcor Eclipse Wire	15%
Milcor Triplex Wire	10%
Milcor Milwaukee Extension	10%
Milcor Steel (galv. after forming) List	plus 12½%
Milcor Selflock E. T. Wire, List	plus 50%

HOOKS

Box

V. & B. No. 1, each $0 26

Conductor

"Direct Drive" Wrought Iron for wood or brick 15%

Hay

V. & B. No. 1, each $0 26

HUMIDIFIERS

"Front-Rank," Automatic

In single lots	
In lots of 10 or more	50 5%
In lots of 25 or more	50-1
Vapor pans, etc., each	50%

LIFTERS

Stove Cover

Coppered	per gro. $6 00
Alaska	per gro. 4 75

MALLETS

Tinners

Hickory per doz. $2 25

MITRES

Galvanized steel mitres.

28 Ga.	70
26 Ga.	60-20

NAILS

Cut Steel	$4 35
Cut Iron	4 35

Wire

Common	2 95
Cement Coated	2 95

(Continued on Page 124)

This eighteenth-century house has a 30-year-old Sheet Steel Roof

THERE is abundant evidence of Sheet Steel's durability in exposed service. Take for example the one hundred and forty-year-old house in Skowhegan, Maine, shown above. In 1896 its 28-gauge, standing seam, galvanized Sheet Steel roof was installed. Despite its seven gables this roof has never leaked. It has never been painted (this Committee, however, recommends that Sheet Steel roofs be painted), but the owner, Mrs. C. E. Norton, says there isn't a rust spot on it today after 31 years service. That's typical Sheet Steel performance. For further information regarding Sheet Steel for roofs or other exposed service, write the SHEET STEEL TRADE EXTENSION COMMITTEE, OLIVER BUILDING, PITTSBURGH, PA.

Some other Old Roofs of *Sheet Steel*

West Ports Steamship Co.
Milwaukee, Wis.
Roof installed 1896

E. D. Conklin
Cold Water, Mich.
Roof installed 1895

Presbyterian Church
Shreveport, La.
Roof installed 1870

Court House, Peoria, Ill.
Roof installed 1876

Taylor residence, Shreveport, La.
Roof installed 1878

J. E. Modler, Sterling, Ill.
Roof installed 1891

David Allen, Cold Water, Mich.
Roof installed 1895

American Auto Painting Co.
Grand Rapids, Mich.
Roof installed 1906

A. L. Robinson, Pekin, Ill.
Roof installed 1906

Chas. Meharry, Attica, Ind.
Roof installed 1909

J. H. Brehm, Cold Water, Mich.
Roof installed 1897

Thos. Bennett, Rossville, Ind.
Roof installed 1911

MASTER TEC BRAND

This trade-mark stenciled on galvanized Sheet Steel is definite insurance to the buyer that every sheet so branded is of prime quality—full weight for the gauge stamped on the sheet—never less than 28 gauge—and that the galvanizing is of the full weight and quality established by the SHEET STEEL TRADE EXTENSION COMMITTEE *specification.*

SHEET STEEL

for Strength Safety Beauty *and* Economy

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NETTING, POULTRY

Galvanized before weaving 57½-5%
Galvanized after weaving.52½-5%

PASTE

Asbestos Dry Paste:

200-lb. barrel	$16 00
100-lb. barrel	8 75
35-lb. pail	3 50
10-lb. bag	1 10
5-lb. bag	60
2½-lb. cartons	35

PIPE

Conductor
Cor. Rd., Plain Rd. or Sq.

Galvanized
Crated and nested (all gauges) 75-2½%
Crated and not nested (all gauges) 70-15%

Furnace Pipe
Double Wall Pipe and Fittings 50%
Single Wall Pipe, Round Galvanized Pipe 50%
Galvanized and Tin Fittings.50%

Lead
Per 100 lbs.....$12 50

Stove Pipe
"Milcor" "Titelock" Uniform Blue Stove

28 gauge, 5 inch U. C. nested	11 50
28 gauge, 6 inch U. C. nested	12 25
28 gauge, 7 inch U. C. nested	14 25
30 gauge, 5 inch U. C. nested	10 50
30 gauge, 6 inch U. C. nested	11 25
30 gauge, 7 inch U. C. nested	13 25

T-Joint Made up
6-inch, 28 ga....per doz. $ 5.00

All Zinc
No. 11, all styles.....60%

POKERS, STOVE

W'r't Steel, str't or bent, ...per doz.	$0 75
Nickel Plated, coil handles, ...per doz.	1 10

POKERS, FURNACE

Each	$0 50

PULLEYS

Furnace Tackle....per doz.	$0 60
.....per gro.	6 00
Furnace Screw (enameled) .....per doz.	75

Ventilating Register

Per gross.....	9 00
Small, per pair.....	30
Large, per pair.....	50

PUTTY

Commercial Putty, 100-lb Kits	$3 40

QUADRANTS

Malleable Iron Damper.....10%

REDUCERS—Oval Stove Pipe

	Per Doz.
7—6, 1 doz. in carton.....	$2.25

REGISTERS AND BORDERS—Baseboard, Floor and Wall.

Cast Iron 20%
Steel and Semi-Steel.....40%
Baseboard 40%
Wall 40%
Adjustable Ceiling Ventilators.40%

Register Faces—Cast and Steel
Japanned, Bronzed and Plated, 4x6 to 14x14.....40%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

RIDGE ROLL

Galv., Plain Ridge Roll, b'did 75-10-5%
Galv., Plain Ridge Roll crated 75-10%
Globe Finials for Ridge Roll 50%

ROOFING

	Per Square
Best grade, slate surf. prepared	$ 2 30
Best talc surfaced.....	2 65
Medium talc surfaced.....	2 00
Light talc surfaced.....	1 20
Red Rosin Sheeting, per ton	57 00

SCREWS

Sheet Metal

7, ½x⅛, per gross.....	$0 52
No. 10, ¾x3/16, per gross.	68
No. 14, ⅞x¼, per gross...	89

SHEARS, TINNERS' & MACHINISTS'

Viking $22 00

Lennox Throatless
No. 18 .....35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa.)

SHIELDS, REGISTER

No. 1 "Gem" floor....$12 00 doz.
No. 2 "Gem" wall..... 6 00 doz.

SHOES

Galv. 28 Gauge, Plain or corrugated round flat crimp...60%
26 gauge round flat crimp....45%
24 gauge round flat crimp....15%

SNIPS, TINNERS'

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SQUARES

Steel and Iron.....Net
(Add for bluing, $3 per doz. net.)

Mitre .....Net

Try .....Net

Try and Bevel.....Net

Try and Mitre.....Net

Fox's .....per doz. $6 00

Winterbottom's 10%

STOPPERS, FLUE

Common .....per doz.	$1 10
Gem, No. 1.....per doz.	1 10
Gem, flat, No. 3....per doz.	1 00

VENTILATORS

Standard.....30 to 40%

WIRE

Plain annealed wire, No. 5, per 100 lbs.....	$3 05
Galvanized barb wire, per 100 lbs.	3 90
Wire Cloth—black painted, 12-mesh, per 100 sq. ft....	1 65
Cattle Wire—galvaniz'd catch weight spool, per 100 lbs..	3 65
Galvanized Hog Wire, 80 rod spool, per spool.....	3 18
Galvanized Plain Wire, No. 9, per 100 lbs.....	3 40
Stove Pipe, per stone.....	1 10

WRINGERS

No. 790, Guarantee ....each	$5 10
No. 770, Bicycle .....each	4 70
No. 670, Domestic .....each	4 35
No. 110, Brighton .....each	3 70
No. 750, Guarantee ....each	5 10
No. 740, Bicycle .....each	4 70
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No. 2, Superb .....each	2 65

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Lamson & Sessions Co., Cleveland, Ohio

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Dreis & Krump Mfg. Co., Chicago, Ill.

Brakes—Cornice.
Dreis & Krump Mfg. Co., Chicago, Ill.

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Copper & Brass Research Association, New York
Merchant & Evans Co., Philadelphia, Pa.

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Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable.
Fanner Mfg. Co. Cleveland, Ohio

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Wheeling Corrugating Co., Wheeling, W. Va.

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Fanner Mfg. Co., Cleveland, Ohio

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Standard Ventilator Co., Lewisburg, Pa.

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Teela Sheet Metal Co., Oshkosh, Wis.

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Sturtevant Co., B. F., Boston, Mass.

Cleaners—Suction.
Sturtevant Co., B. F., Boston, Mass.

Clinker Tongs.
L. J. Mueller Furnace Co., Milwaukee, Wis.

Clips—Roofing.
Wm. Pfeifer, New York, N. Y.

Coal Chutes.
Majestic Co., The, Huntington, Ind.

Copper.
Copper & Brass Research Association, New York

Cornices.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

Cut-offs—Rain Water.
Milwaukee Corrugating Co., Milwaukee, Wis.

Damper Accessories.
Parker-Kalon Corp., New York, N. Y.

Damper Clips.
L. J. Mueller Furnace Co., Milwaukee, Wis.
Charlestown, Mass.

Damper Regulators.
Parker-Kalon Corp., New York, N. Y.

Diffuser—Air Duct.
Aeolus-Dickinson Co., Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis.

Doors—Metal
Lupton's Sons Co., David, Philadelphia, Pa.

Drive Screws—Hardened Metallic.
Parker-Kalon Corp., 354 West 13th St., New York

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Barnes Zinc Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Berger Co., L. D., Philadelphia, Pa.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

Elbows and Shoes—Conductor.
Barnes Zinc Products Co., Chicago, Ill.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Double-Duty Mfg. Co., Aurora, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

Wood Faces—Cold Air.
American Wood Register Co. Plymouth, Ind.
Eaglesfield Ventilator Co., Indianapolis, Ind.
Milwaukee Corrugating Co., Milwaukee, Wis.

Fences.
American Steel & Wire Co., Chicago, Ill.

Fittings—Conductor.
Barnes Zinc Products Co., Chicago, Ill.

Flue Thimbles.
Milwaukee Corrugating Co., Milwaukee, Wis.

Furnace Cement—Asbestos.
Buckeye Products Co., The, Cincinnati, Ohio
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Pecora Paint Co., Philadelphia, Pa.

Furnace Cement—Liquid.
Technical Products Co., Pittsburgh, Pa.

Furnace Cleaners.
Sturtevant Co., B. F., Boston, Mass.

Furnace Fans.
A. H. Robinson Company, Cleveland, Ohio
Sturtevant Co., B. F., Boston, Mass.
Warm Air Furnace Fan Co., The, Cleveland, Ohio

Furnace Rings.
Milwaukee Corrugating Co., Milwaukee, Wis.
Walworth Run Fdy. Co., Cleveland, Ohio

Furnaces—Gas.
Calkins & Pearce, Columbus, Ohio

Furnaces—Warm Air.
Agricola Furnace Co., Gadsen, Ala.
American Furnace Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
Brillion Iron Works, Brillion, Wis.
Calkins & Pearce, Columbus, Ohio
Colburn Heater Co., Chicago, Ill.
Floral City Heater Co., Monroe, Mich.
Forest City Fdy. & Mfg. Co., Cleveland, Ohio
Henry Furnace & Fdy. Co., Cleveland, Ohio
Hess-Snyder Co., Massillon, Ohio
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Monitor Furnace Co., Cincinnati, Ohio
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XXth Century Heating & Ventilating Co., Akron, Ohio
Utica Heater Co., Utica, N. Y.
Waterman-Waterbury Co., Minneapolis, Minn.
Western Steel Products Co., Duluth, Minn.
Wise Furnace Co., Akron, Ohio

Garages—Metal.
Milwaukee Corrugating Co., Milwaukee, Wis.
The Thomas & Armstrong Co., London, Ohio
Trachte Brothers Co., Inc., Madison, Wis.

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Prest-O-Lite Co., Inc., New York, N. Y.

Gas (Nitrogen).
Linde Air Products Co., New York, N. Y.

Gas (Oxygen).
Linde Air Products Co., New York, N. Y.

Glass—Wire.
Lupton's Sons Co., David, Philadelphia, Pa.

Grilles.
Diamond Mfg. Co., Wyoming, Pa.
Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Co, New Britain, Conn.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
United States Register Co., Battle Creek, Mich.

Grilles—Store Front.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Guards—Machine and Belt.
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler.
Berger Bros. Co., Philadelphia, Pa.

Handles—Soldering Iron.
Hyro Mfg. Co., New York, N. Y.

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Berger Co., L. D., Philadelphia, Pa.
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Majestic Co., The, Huntington, Ind.
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Waterman-Waterbury Co., Minneapolis, Minn.

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Waterman-Waterbury Co., Minneapolis, Minn.

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Berger Co., L. D., Philadelphia, Pa.

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Automatic Humidifier Co., Waterloo, Iowa
L. J. Mueller Furnace Co., Milwaukee, Wis.
Robinson Furnace Co., Chicago, Ill.

Lath—Expanded Metal.
Milwaukee Corrugating Co., Milwaukee, Wis.

Machines—Crimping.
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert.
Bertsch & Co., Cambridge City, Ind.

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Bertsch & Co., Cambridge City, Ind.
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Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
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Whitney Mfg. Co., W. A., Rockford, Ill.
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Ross-Gould Co., St. Louis, Mo.

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Diamond Mfg. Co., Wyoming, Pa.
Harrington & King Perforating Co., Chicago, Ill.

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Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

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Barnes Zinc Products Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

Nails—Hardened Masonry.
Parker-Kalon Corp., New York, N. Y.

Nails—Wire.
American Steel & Wire Co., Chicago, Ill.

Nickel—Zinc
Apollo Metal Works, La Salle, Ill

Nitrogen (Gas).
Linde Air Products Co., New York, N. Y.

Ornaments—Sheet Metal.
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
Milwaukee Corrugating Co., Milwaukee, Wis.

Oxygen (Gas).
Linde Air Products Co., New York, N. Y.

Paint.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Pecora Paint Co., Philadelphia, Pa.

Patterns—Furnace & Stove.
Cleveland Castings Pattern Co., Cleveland, Ohio
Quincy Pattern Co., Quincy, Ill.
Vedder Pattern Works, Troy, N. Y.

Pipe and Fittings—Furnace.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Mueller Furnace Co., L. J., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Robinson Furnace Co., Chicago, Ill.
Standard Furnace & Supply Co., Omaha, Neb.

Pipe and Fittings—Stove.
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

Pipe—Conductor.
Barnes Zinc Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Friedley-Voshardt Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Metal & Mfg. Co., Wheeling, W. Va.

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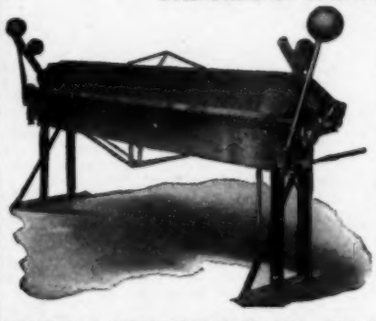

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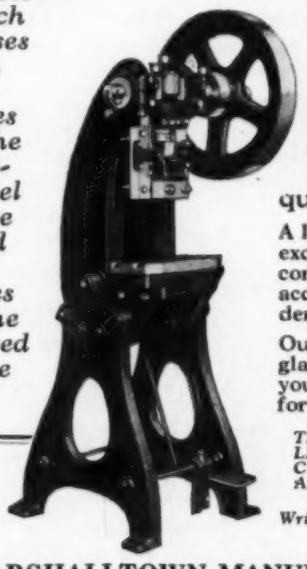

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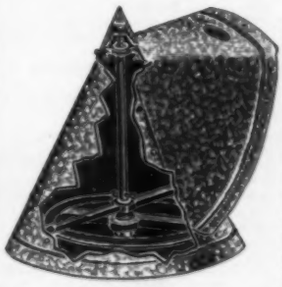

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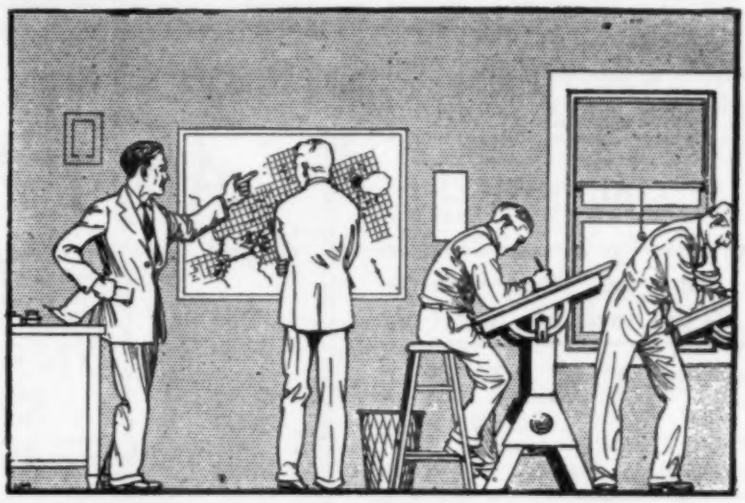

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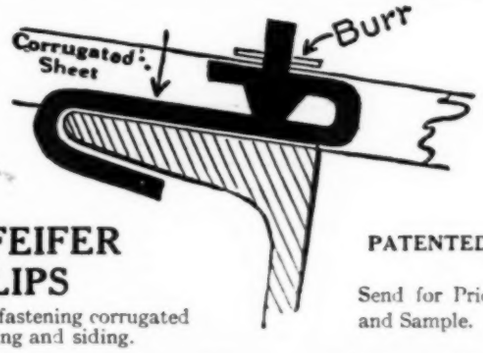

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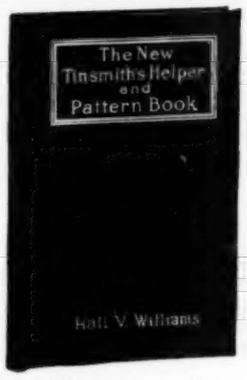

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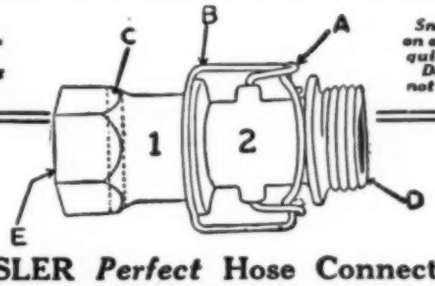

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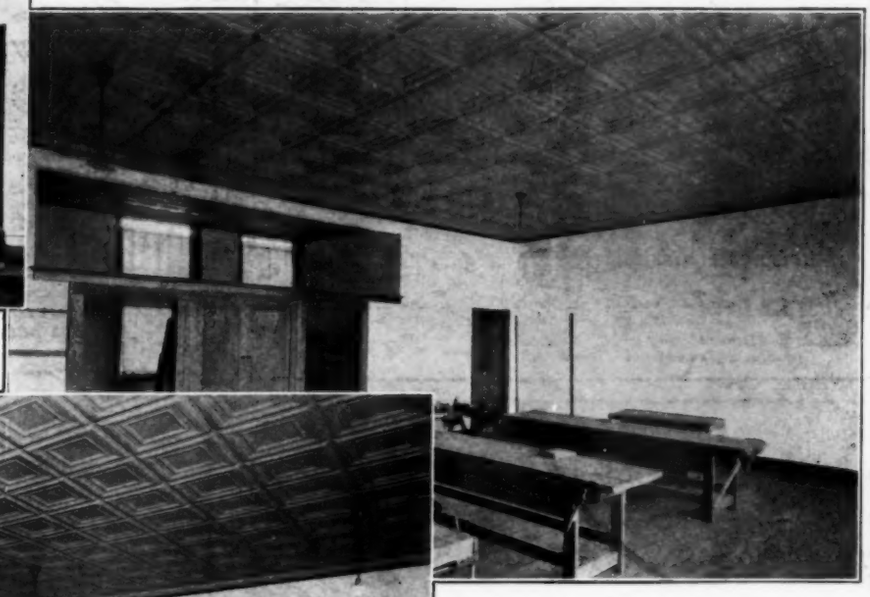

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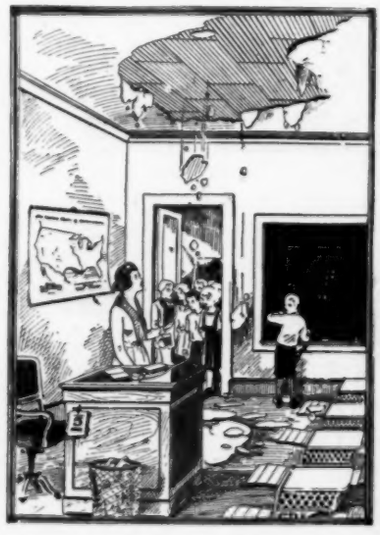

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